



Jerash University
Faculty of pharmacy
Department of pharmaceutical science
First semester, 2016/2017

Course Syllabus

Course Title: pharmaceutical organic chemistry (II)	Course code: 1101210
Course Level: 2 nd year	Course prerequisite (s) and/or co requisite (s): Pharmaceutical organic chemistry I
Lecture Time: Su + Tu, 11.00-12.00	Credit hours: 2 hours

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Dr. Muwaffag Badawneh	Professor	406 Pharmacy building	12:00 – 13:00	badawneh@hotmail.com

Course module description:

The course is designed to introduce/illustrate the importance of organic compounds (aromatic, cyclic, heterocyclic) and to learn the student about their nomenclature, synthesis preparation and reaction

Course module objectives:

After completion of pharmaceutical organic chemistry I and its fundamentals, in particular the organic functional groups this course will provide a comprehensive and sound understanding of the aromatic compounds and their preparation, reactions and IUPAC nomenclature, in this course the student will study the DNA and RNA structure This information will prepare the student to study the pharmaceutical medicinal chemistry (I) where the student will begin the study of the drug structure and preparation

Course/ module components

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

1. Organic chemistry. By John Mcmurry 7edition,2007

References:

Organic Chemistry, SOLOMN and FRYHLE, Wily international brooks/cale, thombsn learning, 2007, ninth edition.

Teaching methods:

Lectures, tutorials, problem solving, using molecular modeling.

Learning outcomes:

- Knowledge and understanding

At the end of this module student will be able to:

1. Have knowledge of the general reaction of aromatic compounds
2. Understand the nomenclature of aromatic, heterocyclic compounds, carboxylic acid and their derivative, aldehydes and ketones, amines, and phenols. In addition to knowledge of their reaction and synthesis.
3. Know the composition of nitrogen bases, nucleoside and nucleotides, RNA and DNA
4. Have the knowledge of cyclic compound (nomenclature, stereochemistry, chemical reaction).

- Cognitive skills (thinking and analysis).

Interactive learning by participating the student into problem solving at the lecture times.

- Communication skills (personal and academic).

Review concept at office hours

Assessment instruments

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
First examination	20
Second examination	20
Final examination: 50 marks	50
Reports, research projects, Quizzes, Home works, Projects	10
Total	100

Taking headlines/notes from the text book with further elaborated/detailed discussion during the lecture.

For example: stereochemistry: chiral molecules, chapter 5 from Organic chemistry. By T.W graham solomons, 8th edition, 2003

- Avoiding plagiarism.

Course/module academic calendar

week	Basic and support material to be covered
(1)	Aromatic chemistry" introduction, aromaticity, structure of benzene, stability of benzene ring, aromatic character and nomenclature of benzene derivatives.
(2)	Arenes and their derivatives, structure and their nomenclature, preparation of alkyl benzenes, Side chain reactions and electrophilic aromatic substitution.
(3)	Polynuclear aromatic compounds: naphthalene, anthracene,

1 st . Exam	phenanthrene their reactions and derivatives.
(3)	Heterocyclic compounds : Five member rings (pyrrole, furan , thiophene)and six member rings(pyridine) their properties and electrophilic substitutions.
(4)	Carboxylic acids, structure and nomenclature, Physical properties acidity and their reactions.
(5)	Carboxylic acid derivatives: Acid chlorides , Acid anhydrides, Amides and Esters, Their structures and nomenclature, synthesis, reactions.
(6)	Amines: nomenclature, basicity, preparation, reaction, diazonium salts and their reactions.
(6) 2 nd Exam	Alcohols and Phenols: structure and nomenclature, acidity of phenols ,synthesis, reactions, analysis of alcohols and phenols.
(7)	Aldehyde and ketones: structure and nomenclature, preparations, reaction (oxidation, reduction Cannizzaro reaction).
(7)	Carbanions: Reactions involving carbanions , Aldol-Claisen condensations, Aldol condensations, carbanions in organic synthesis.
(8)	Biomolecules: Monosaccharides and carbohydrates, amino acids and proteins DNA and RNA
(8) Final Examination	Physical method of structural determination:U.V spectroscopy, Mass spectroscopy , I.R spectroscopy and NMR.

Expected workload:

On average students need to spend 1 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.

Module references

Books

1.Organic chemistry :A Short Course. By Harold Hart, Leslie E. Carine, David J hart. Publisher:Houghton Mifflin College; 10th edition (January 1999) ISBN: 0395902258

2. Introduction to organic chemistry (study guide and solution manual) by Andrew streiwieser, Clayton H. heathercock, Edward M. Kosower. Publisher:prentice hall college Div; (December 1998) ISBN:0130129909