The Hashemite University

الجامعـــــــــة الهاشميـــــــــــة

Faculty of Pharmaceutical Sciences

كلية العلوم الصيدلانية

Syllabus: Pharmaceutical Organic Chemistry I (#1917031210)
First Semester 2022/2023

COURSE INFORMATION	
Course Name: Pharmaceutical Organic Chemistry I Learning method: face-to-face learning **Semester:** First **Department:** Pharmaceutical Chemistry **Faculty:** Pharmaceutical Sciences	**Course Code: 1917031210** **Section:** As per semester **Core Curriculum**: 2019 Study Plan JNQFlevel:7
Day(s) and Time(s): According to HU courses timetable/semester **Classroom:** As per semester **Date prepared: Jan. 2020** **Date updated: Feb. 2024**	**Credit Hours:** 3 **Prerequisites**: 1701081137

COURSE DESCRIPTION

Pharmaceutical Organic Chemistry I course provides the student with the necessary background to understand the chemistry of carbon-containing compounds. Topics will include structure, stereochemistry, nomenclature, synthesis, properties, and reactions of the major classes of organic compounds such as aliphatic hydrocarbon, aromatic compounds, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, amines, amino acid, nucleic acids and carbohydrates.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These include:

- PowerPoint lectures and active classroom-based discussion
  Students will be encouraged to participate and be actively involved in the learning process. Lectures will start with questions to inquire about the students' prior knowledge of the topic. These questions will also be repeated at the end of the lecture to gain insight into the students' competences (to verify whether students have understood the topic). During delivering the lecture presentation, time will be given to allow students to reflect about what they have learnt and think in and discuss some examples of short case studies.
- Relevant films and documentaries
- E-learning resources: e-reading assignments and homework through Model and Microsoft Team

FACULTY INFORMATION

Name	**Dr. Lubna Swellmeen**
Academic Title:	**Assistant Professor**
Office Location:	**Third Floor(A-420)**

Telephone Number:	**Extension: 3433**
Email Address:	**lubnam@hu.edu.jo**
Office Hours:	**As announced per semester** ***Please send an e-mail (lubnam@hu.edu.jo) to meet at any other time.***

REFERENCES AND LEARNING RESOURCES

Required Textbook(s):.

1- Organic Chemistry: A Short Course ^{13}th Edition, David J. Hart, Leslie Craine , Harold Hart, Christopher M. Hadad, Mifflin Company, USA, 2012. 13th edition (September 3, 2020)

2-Organic Chemistry, ^{9}th edition, McMurry J.E. published by Brooks/Cole, Cengage Learning in 2015.

Suggested Additional Resources:

1- Organic Chemistry is written by Leroy G. Wade, Prentice Hall, 2012. 3. Elements of Organic Chemistry (second edition) is written by Isaak Zimmerman and Henry Zimmerman and published by Macmillan, Co. Inc. New York, 1983.

Useful Web Resources:

As per each lecture.

Course Objectives

By the end of the course the student should be able to:

1. Give students a broad and deep knowledge about the fundamental principles of major classes of organic compounds such as aliphatic hydrocarbon, aromatic compounds, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, amines, amino acid, nucleic acids, and carbohydrates
2. Recognize various organic functional groups.
3. Understand the types of reactions in Organic Chemistry.
4. Name the organic compounds commonly and systematically (IUPAC).
5. Outline the preparation and reactions of various organic compounds.
6. Draw the structure of organic compounds and curly arrows correctly, suggesting the reaction mechanisms of some simple organic reactions. Providing students with the importance of stereochemical aspects, physical properties, synthesis methods, and reactions of these organic compounds.

Course Learning Outcomes (CLOs)

A. Knowledge Transfer:

Upon completion of the course, the student should be able to:

A-1 Recall major principles and concepts in organic chemistry

A-2 Name according to IUPAC rules of the major classes of organic compounds.

A-3Understand chemistry, reactions, and structure aspects of these organic compounds.

A-4 Outline the appropriate chemical equations for the preparation of certain organic compounds.

B. Intellectual Skills:

B-1 Identify different functional groups in organic chemistry, their classification and their physical properties. Analyze the nature and behavior of functional groups in organic reactions (reactivity, mechanism. Interpret and analyse chemical information and data obtained from reactions mechanisms.

B-2 Combine and apply different reactions mechanisms with practical work.

B-3 Assign names of organic compounds.

B-4 Conduct further study and researchers in the field of organic, natural product, medicinal chemistry, biochemistry and biomedicinal sciences.

C. Approach to Practice:

When students have completed the program they will be able to:

C-1 encourage student to read widely and to research the various topics using the assigned texts, libraries and relevant web sites

C-2 gain maximum benefit from their studies.

C-3 encourage students to be more responsible for their own learning and to become life long learners

D. Personal and Professional Development: When students have completed the program they will be able able to:

D-1 Develop of problem solving and critical thinking skills.

D-2 Use of videos and animation to effectively understand the concepts.

D-3 able to use simple word and IT skills (i.e., data processing, software, internet, and multimedia) and the library to find information.

D-4 able to be self-motivated learners and responsive to feedback.

D-5 Work in team (i.e., sharing presentations and discussions and solving problem).

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:

Tel: **00962-5-3903333 Extension: 4209**
Location: **Students Affairs Deanship/ Department of Student Welfare Services**
Email: **amalomoush@hu.edu.jo**
amalomoush@staff.hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

On average, students need to spend 15 hrs of study and preparation weekly. At the beginning of the lectures, students should be on time and should not leave before the end of the lecture without an accepted excuse. **If the student missed a class, it is him/her responsibility to find out about any announcements or assignments they have missed.** For any clarification, students should communicate with their instructor at her posted office hours or by appointment. Students should listen well to the lecture, if anyone has a question, he/she should ask the instructor. Students can find the course material at the course Microsoft team/Model after the lecture.

Sharing of course materials is forbidden. No course material including, but not limited to, course outline, lecture hand-outs, videos, exams, and assignments may be shared online or with anyone outside the class. Any suspected unauthorized sharing of materials, will be reported to the university's Legal Affairs Office. If a student violates this restriction, it could lead to student misconduct procedures.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of The Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

Missed Assessments

In all cases of assessment, students who fails to attend an exam on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a failure .grade for this part of the assessment

• In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with university regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Cheating

Cheating, academic disconduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied. Cheating policy: The participation, the commitment of cheating will lead to applying all following penalties together:

- Failing the subject, he/she cheated at
- Failing the other subjects taken in the same course
- Not allowed to register for the next semester
- The summer semester is not considered as a semester

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment:

Course Assessment Plan						
Assessment	**Grade Weighting**	**Deadline Assessment**	**CILOs**			
			A	**B**	**C**	**D**
First Exam	30%	~ 6th week	A	B	C	D
Second Exam	25%	~ 10th week	A	B	C	D
Quizzes/ Homework/ Assignments /Projects	5%	~ 3th week – ~ 8th week -	A	B	C	D
Final Exam	40%	~ 15th /16th week	A	B	C	D

Description of Exams
Test questions will predominately come from material presented in the lectures and the lectures themselves. Semester exams may be conducted during the regularly scheduled lecture period. Exam may consist of a combination of multiple choice, short answer, match, true and false, and/or descriptive questions.

Quizzes: Unannounced quizzes will be given during or/and at the end of each chapter based upon the previous lectures. It will enforce that you come prepared to the class.

No make-up exams will be given. Only documented absences will be considered as per HU guidelines. Make-up exams may be different from regular exams in content and format.

Grades are not negotiable and are awarded according to the following criteria:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50

F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

"Lecture hours and weeks are approximate and may change as needed"

Note: For the 2 lecture periods per week (S/T, M/W), one lecture period covers 1.5 lecture hours (75 minutes). The course content specifies chapters of the textbook that will be included in exams.

All lectures are delivered by face-to-face learning.

Course Content					
Week Number	**No. of Hours**	**CILOs**	**Subject**	**Delivery Methods**	**Assessment Methods**
1	**1.5**	A1-A4 B1-B4 C1-C3	***Introduction*** **Introduction to Organic Chemistry & the Course Ouine**	PowerPoint Lecture Active Classroom-Based Discussions	Exams
1-3	**7**	A1-A4 B1-B4 C1-C3	**Chemical Bonding**	PowerPoint Lecture Active Classroom-Based Discussions	Exams
4-6	**9**	A1-A4 B1-B4 C1-C3	**Aliphatic Hydrocarbons (Alkanes, Alkene and Alkyne)** • Structure, Nomenclature • Properties, Sources, • Conformation, • Preparation, and Reactio	PowerPoint Lectures Active Classroom-Based Discussions	Exams
7-8	**6**		**Aromatic compounds (Cycloalkanes)** • Structure • Nomenclature • Conformational Analysis • Reactions	PowerPoint Lecture	Exams

		A1-A4 B1-B4 C1-C3		Active Classroom-Based Discussions	
9	**1.5**	A1-A4 B1-B4 C1-C3	**Alcohols, Phenols and Ethers :** • Structures • Nomenclature, • Properties, Preparation, and Reactions	PowerPoint Lecture Active Classroom-Based Discussions	Exams

10-11	**6**	A1-A4 B1-B4	**Aldehydes and Ketones:**	PowerPoint Lecture	Exams

	3 3	C1-C3	• Structures • Nomenclature, Prope • Preparation, • and Reactions	Active Classroom-Based Discussions	
12	**3**	A1-A4 B1-B4 C1-C3	**Carboxylic acids and Their Derivatives:** • Structures • Nomenclature, Prope • Preparation, and Reactions	PowerPoint Lecture Active Classroom-Based Discussions	Exams
13	**3**	A1-A4 B1-B4 C1-C3	**Amines:** • Structures • Nomenclature, Prope • Preparation, and Reactions	PowerPoint Lecture Active Classroom-Based Discussions	Exams
14	**3**	A1-A4 B1-B4 C1-C3 D1- D3	**STERIOCHEMISTRY**	PowerPoint Lecture Active Classroom-Based Discussions	Exams
15	**3**		**Revision**	Active Classroom-Based Discussions	
16	**-**		**University Final Exams**		