Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E

Study Plan No.	**2021/2022**		**University Specialization**		**Bachelor of Pharmacy**	
Course No.	**0201216**		**Course Name**		**Pharmaceutical Organic Chemistry (2)**	
Credit Hours	**3**		**Prerequisite *Co-requisite**		**Pharmaceutical Organic Chemistry (1)**	
Course Type	☐ Mandatory University Requirement	☐ University Elective Requirement	☐ Faculty Mandatory Requirement	☐ Support course family requirements	☑ **Mandatory Requirement**	☐ Elective Requirement
Teaching Style	☐ Full Online Learning		☐ Blended Learning		☑ **Traditional Learning**	
Teaching Model	☐ 1 Synchronous: 1 Asynchronous		☐ 1 Face to Face: 1 Asynchronous		☑ **2 Traditional**	

Faculty Member and Study Divisions Information *(to be filled in each semester by the subject instructor)*

Name	Academic rank	Office No.	Phone No.	E-mail	
Office Hours (Days/Time)	**Sunday, Tuesday, Thursday ()**		**Monday, Wednesday ()**		
Division number	**Time**	**Place**	**Number of Students**	**Teaching Style**	**Approved Model**
				Traditional Learning	**2 Traditional**

Brief Description

This course explores the structures and chemical transformations of organic molecules. It introduces important functional groups in molecules and explains their reactivity. It assists students to define a possible scheme for compounds' synthesis. It also addresses basic concepts of electronic structures and applies these concepts to solve problems from various areas of organic chemistry, including reactivity patterns and synthesis.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	Organic Chemistry, T.W.G. Solomons and C.B. Fryhle, 12th Edition, 2016, John Wiley & Sons.			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Organic Chemistry by Hart, Craine, Hart, and Hadad, 13th Edition, 2011, Brooks/Cole. 2. Organic Chemistry by McMurry, 9th Edition, 2016, Brooks/Cole.			
Supporting Websites	-			
The Physical Environment for Teaching	☑ **Classroom**	☐ Labs	☑ **Virtual Educational Platform**	☐ Others
Necessary Equipment and Software	Moodle			
Supporting People with Special Needs	-			

For Technical Support	E-Learning & Open Educational Resources Center Email: elearning@zuj.edu.jo; Phone: +962 6 429 1511 ext. 425/362

Course learning outcomes *(K= Knowledge, S= Skills, C= Competencies)*

No.	Course Learning Outcomes	The Associated Program Learning Output Code
Knowledge **The student should be able to:**		
K1	Explain the physical and chemical properties of organic compounds and the effect of electron-donating and electron-withdrawing groups on these properties.	**MK2**
K2	Recognize the main differences between various functional groups and their reactivities.	**MK2**
K3	Identify, differentiate, and indicate suitable conditions and reagents for chemical reactions.	**MK2**
K4	Predict the reaction mechanisms and draw their mechanistic pathways.	**MK2**
Skills **The student should be able to:**		
S1	Use the IUPAC nomenclature rules for naming compounds and convert structures to names and names to structures.	**MS4**
S2	Recognize fundamental bond forming reactions and apply them in synthesis.	**MS4**
S3	Draw the resonance structures of compounds and use them to explain stability, acidity, basicity, and reactivity of the compounds.	**MS4**
S4	Predict the outcome of organic reactions when given substrates and reagents.	**MS4**
Competencies **The student should be able to:**		
C1	Perform a professional and personal attitude by the commitment with the lectures attending and submitting tasks on time.	**MC3**

Mechanisms for Direct Evaluation of Learning Outcomes

Type of Assessment / Learning Style	Fully Electronic Learning	Blended Learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm Exam	30%	30%	**30%**	0%
Participation / Practical Applications	0%	0%	**20%**	50%
Asynchronous Interactive Activities	20%	20%	**0%**	0%
Final Exam	50%	50%	**50%**	50%

Note 1: *Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.*
Note 2: *According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).*

Schedule of Simultaneous / Face-to-Face Encounters and their Topics

Week	Subject	Learning Style*	Reference ** (Pages in Course Book)
1	Ethers and Epoxides	Lecture Participatory learning Problem-based learning	504-533
2	Aromatic Compounds	Lecture Participatory learning Problem-based learning	632-674
3	Aromatic Compounds	Lecture Participatory learning Problem-based learning	632-674
4	Reactions of Aromatic Compounds	Lecture Participatory learning Problem-based learning	676-727
5	Reactions of Aromatic Compounds	Lecture Participatory learning Problem-based learning	676-727
6	Phenols	Lecture Participatory learning Problem-based learning	964-980
7	Aldehydes and Ketones: Nucleophilic Addition to the carbonyl group	Lecture Participatory learning Problem-based learning	729-765
8	Aldehydes and Ketones: Nucleophilic Addition to the carbonyl group	Lecture Participatory learning Problem-based learning	729-765
9	Reactions at the α Carbon of Carbonyl Compounds: Enols and Enolates **Midterm Exam**	Lecture Participatory learning Problem-based learning	832-857
10	Condensation and Conjugate Addition Reactions of Carbonyl Compounds	Lecture Participatory learning Problem-based learning	869-897
11	Carboxylic Acids and Their Derivatives	Lecture Participatory learning Problem-based learning	779-830
12	Carboxylic Acids and Their Derivatives	Lecture Participatory learning	779-830

		Problem-based learning	
13	Amines	Lecture Participatory learning Problem-based learning	911-963
14	Amines	Lecture Participatory learning Problem-based learning	911-963
15	Heterocyclic compounds	Lecture Participatory learning Problem-based learning	388-408 (Supportive Book 1)
16	**Final Exam**	**-**	**-**

** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.*
*** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.*

Schedule of Asynchronous Interactive Activities *(in the case of e-learning and blended learning)*

Week	Task / Activity	Reference	Expected Results
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