

Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E
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Study Plan No.	2021/2022	University Specialization	Bachelor of Pharmacy
Course No.	0201212	Course Name	Pharmaceutical Organic Chemistry Lab
Credit Hours	1	Prerequisite *Co-requisite	General Chemistry Lab + Pharmaceutical Organic Chemistry (1) + *Pharmaceutical Organic Chemistry (2)
Course Type	☐ Mandatory University Requirement	☐ University Elective Requirement	☐ Faculty Mandatory Requirement
Teaching Style	☐ Full Online Learning	☐ Blended Learning	☒ Traditional Learning
Teaching Model	☐ 1 Synchronous: 1 Asynchronous	☐ 1 Face to Face: 1 Asynchronous	☒ 1 Traditional

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

(to be signed at each semester by the faculty member)					
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	1 Traditional

Brief Description

This course introduces students to laboratory safety rules and provides essential knowledge and practical skills for handling chemicals and glassware. Students will gain hands-on experience in methods and techniques for the identification, purification, and separation of organic compounds, guided by an understanding of the physical and chemical properties of functional groups.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	- Pharmaceutical Organic Chemistry Lab manual
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Vogel's Textbook of Practical Organic Chemistry by Brian S. Furniss, Antony J. Hannaford, Peter W.G. Smith, Austin R. Tatchell, Prentice Hall, 2003, 5th edition 2. Unitized Experiments in Organic Chemistry by Ray Q. Brewster, Calvin A. VanderWerf, William E. McEwen, Wadsworth Publishing Company, 1977, 4th edition
Supporting Websites	.
The Physical Environment for Teaching	☐ Classroom ☒ Labs ☒ Virtual Educational Platform ☐ Others

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Necessary Equipment and Software	- Moodle.
Supporting People with Special Needs	
For Technical Support	E-Learning & Open Educational Resources Center. Email: ellearning@zuji.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	Apply the proper procedures for safe handling of chemicals, glassware, and simple equipment.	MK1
K2	Recognize factors that affect the physical properties (melting point, boiling point, solubility) of an organic compound.	MK2
K3	Predict the outcomes of organic reactions based on functional group reactivity.	MK2
Skills		
The student should be able to:		
S1	Perform laboratory techniques to measure physical properties, and to examine purity of organic compounds.	MS4
S2	Perform appropriate separation and purification methods such as distillation, recrystallization, chromatography and extraction.	MS4
S3	Distinguish between organic compounds using qualitative tests for functional groups in unknown organic compounds (e.g., alcohols, phenols, aldehydes, ketones).	MS4
Competencies		
The student should be able to:		

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%	30%	60%
Asynchronous Interactive Activities	30%	30%	0%	0%
Final Exam	40%	40%	40%	40%

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.

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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 **
1	Check-in: Introduction- laboratory rules and safety precautions	Lecture	Lab Manual
2	Melting point determination- Identification and purity examination of organic solids.	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
3	Boiling point determination	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
4	Distillation techniques- separation and purification of organic liquids.	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
5	Recrystallization- Purification of organic compounds	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
6	Extraction- separation and isolation technique.	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
7	Chromatography- identification, separation and purity examination of compounds.	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
8	Alcohols and phenols: Properties and reactions	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
9	Reactions of aldehydes and ketones	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
10	Unknown compound identification	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
11	Fischer esterification	Lecture, lab-based learning	Lab Manual, video on E-Learning platform
12	Electrophilic aromatic substitution- nitration of methyl benzoate	Lecture, lab-based learning	-
13	Preparation of dibenzalacetone	Lecture, lab-based learning	-
14	Check-out		
15	-		
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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