



Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR722 Organic Structure Determination - JNQF Level: 9

First Semester 2024-2025

Course Catalog

3 Credit Hours. The major focus of this course is organic structure determination via spectra. Concepts and applications of modern and advanced spectroscopic and spectrometric techniques in the structural elucidation of organic compounds, including nuclear magnetic resonance spectroscopy (FT-NMR), mass spectrometry (MS), UV-Visible spectroscopy (UV-vis), and Infrared spectroscopy (FT-IR). The physical and chemical principles of each method will be discussed.

Teaching Method: On Campus

Text Book

Title	Spectrometric Identification of Organic Compounds
Author(s)	Robert Silverstein, Francis Webster, David Kiemle, and David Bryce
Edition	8th Edition
Short Name	Ref #1
Other Information	John Wiley, 2015

Course References

Short name	Book name	Author(s)	Edition	Other information
Ref #2	Mass Spectrometry: Principles and Applications	Edmond Hoffmann and Vincent Stroobant	3rd Edition	John Wiley, 2007

Instructor

Name	Prof. Tamam El-Elimat
Office Location	P1 L1
Office Hours	Sun : 10:00 - 11:00 Mon : 10:00 - 11:30 Mon : 13:00 - 14:30 Tue : 10:00 - 11:00 Wed : 10:00 - 11:30
Email	telimat@just.edu.jo

Class Schedule & Room

Section 2:
Lecture Time: Mon, Wed : 08:30 - 10:00
Room: قاعة الكندي/صيدلة

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2, 3, 4, 5, 6, 7, 8	Nuclear Magnetic Resonance (NMR) Spectroscopy	From Ref #1
Weeks 9, 10, 11	Mass Spectrometry (MS)	From Ref #1, From Ref #2
Week 12	Ultraviolet-visible (UV-VIS) and Infrared (IR) Spectroscopy	From Ref #1

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the theoretical foundations of spectroscopic and spectrometric techniques of NMR, MS, UV-vis, and IR, including their underlying physical and chemical principles, operational mechanisms, and their application in the structural elucidation of organic compounds. [1PLO-MP1] [1L9K1, 1L9K2, 1L9K3]	25%	
Interpret spectral data from Nuclear Magnetic Resonance (NMR) to determine structural information, including functional groups, connectivity, and stereochemistry of organic compounds [1PLO-MP2] [1L9K1, 1L9K2, 1L9K3, 1L9S1, 1L9S2, 1L9C1, 1L9S3, 1L9C6]	45%	
Interpret mass spectrometric (MS) data to deduce molecular weight, molecular formula, and fragmentation patterns, leading to structural determination of organic compounds. [1PLO-MP2] [1L9K1, 1L9K2, 1L9K3, 1L9S1, 1L9S2, 1L9C1, 1L9S3, 1L9C6]	20%	
Use UV-visible (UV-vis) spectroscopic data to assess electronic structure, conjugation, and chromophores in organic compounds for structural insights. [1PLO-MP2] [1L9K1, 1L9K2, 1L9K3, 1L9S1, 1L9S2, 1L9C1, 1L9S3, 1L9C6]	5%	

Interpret Infrared (IR) spectra to identify functional groups and bond types present in organic compounds, aiding in the structural elucidation process. [1PLO-MP2] [1L9K1, 1L9K2, 1L9K3, 1L9S1, 1L9S2, 1L9C1, 1L9S3, 1L9C6]	5%	
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PLO1.1	PLO2.1	PLO3.2	PLO3.3	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1	PLO-PT1.1	PLO-PT2.1	PLO-PT2.2	PLO-PT3.1

Relationship to NQF Outcomes (Out of 100%)							
L9K1	L9K2	L9K3	L9S1	L9S2	L9C1	L9S3	L9C6
17.71	17.71	17.71	9.38	9.38	9.38	9.38	9.38

Evaluation	
Assessment Tool	Weight
First Hour Exam	15%
Second Hour Exam	20%
Third Hour Exam	15%
Final Exam	50%

Policy	
Cheating	<p>The commitment of the acts of cheating and deceit such as copying during examinations, altering examinations for re-grade, plagiarism of homework assignments, and in any way representing the work of others as your own is dishonest and will not be tolerated. The standard JUST policy will be applied.</p> <p>المادة 7: إذا ضبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة: أ- اعتباره راسباً في ذلك الامتحان أو الاختبار. ب- إلغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل. ج- فصله من الجامعة لمدة فصل دراسي واحد، وهو الفصل التالي للفصل الذي ضبط فيه.</p>
Attendance	<p>Excellent attendance is expected. JUST policy requires the faculty member to assign a ZERO grade (35) if a student misses 10% of the classes that are not excused. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.</p>
Classroom Cell Phone Policy	<p>The use of cell phones, smartphones, or other mobile communication devices is disruptive and is therefore prohibited during class without permission. Except in emergencies, those using such devices must leave the classroom for the remainder of the class period.</p>

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