



Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR723 Stereochemistry

Second Semester 2023-2024

Course Catalog

2 Credit Hours. This course covers the stereochemistry of organic compounds; chirality; resolution and analysis of enantiomers and diastereomers, conformational isomerism and geometrical isomerism. Introduction to stereoselective synthesis and drug design will be given. In addition, stereoselectivity in nature and spectroscopic determination of relative and absolute chirality will be discussed.

Teaching Method: On Campus

Text Book

Title	Stereochemistry of Organic Compounds
Author(s)	Ernest L. Eliel, Samuel H. Wilen, and Lewis N. Mander.
Edition	5th Edition
Short Name	Textbook
Other Information	1994, Publisher: John Wiley and Sons, Inc.

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Stereoselectivity in Organic Synthesis	Garry Procter	1st Edition	1998. Publisher: Oxford University Press.

Instructor

Name	Prof. Qosay Al-Balas
Office Location	P1L-1
Office Hours	Sun : 09:00 - 11:00 Mon : 11:00 - 12:30 Tue : 09:00 - 11:00 Wed : 10:30 - 12:30
Email	qabalas@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Mon, Wed : 12:30 - 13:30
Room: قاعة الندوات/صينلة

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Conformational isomerism.	From Textbook
Week 2	Geometrical isomers	From Textbook
Week 3	Stereoisomers	From Textbook
Week 4	Configuration	From Textbook
Week 5	Prostereoisomerism	From Textbook , From Ref #1

Week 6	Determination of relative configuration	From Textbook , From Ref #1
Week 7	Properties and separation of stereoisomers	From Textbook , From Ref #1
Weeks 8, 9	Stereochemistry of substitution, elimination. Addition and pericyclic reactions	From Textbook , From Ref #1
Weeks 10, 11	Determination of absolute configuration based on NMR spectroscopy	From Textbook , From Ref #1
Weeks 12, 13	Chiroptical properties	From Textbook , From Ref #1

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the concepts related to stereoisomers, including optical rotation, enantiomers, diastereomers, meso structures, racemates, configuration, chirality, and homotopic and heterotopic ligands and faces.	10%	
Classify stereoisomers by identifying their structural characteristics and differentiating among conformational, geometrical, and optical isomers.	10%	
Explain different techniques used in the determination of the configuration of chiral molecules using chemical and spectroscopic methods.	10%	
Develop strategies to resolve stereoisomers effectively, including the selection of suitable resolving agents or techniques.	20%	
Design synthetic methods for the selective synthesis of enantiomerically and diastereomerically pure compounds, considering factors like reagent selection and reaction conditions.	25%	
Interpret data obtained from optical rotatory dispersion (ord) and circular dichroism (cd) to determine stereochemical properties and configurations of compounds.	25%	

Relationship to Program Student Outcomes (Out of 100%)															
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

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