



Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR782 Advanced Drug Design - JNQF Level: 9
Second Semester 2025-2026

Course Catalog
3 Credit Hours. The course discusses the concept of rational drug design and the conventional strategies applied in lead-to-drug optimization process. The course focuses on mastering the ability of students to critically analyze drug design literatures and solving problems encountered during lead-to-drug optimization process.
Teaching Method: Blended

Text Book	
Title	Textbook of Drug Design and Discovery
Author(s)	Kristian Stromgaard, Povl Krosggaard-Larsen, Ulf Madsen
Edition	5th Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Foye's Principles of Medicinal Chemistry	Victoria F. Roche, S. William Zito, Thomas L. Lemke, and David A. Williams	8th Edition	

Instructor	
Name	Dr. Soraya Alnabulsi
Office Location	-
Office Hours	
Email	smalnabulsi@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon : 10:30 - 12:30 Room: قاعة الندوات/ميدلة

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to drug design and terminology	From 1, From 2
Week 2	Lead Optimization concept	From 1, From 2
Week 3	Drug Likness	
Weeks 4, 5	Optimizing drug-target interactions	
Weeks 6, 7	Improving pharmacokinetic properties	
Weeks 12, 13	Bioisosterism: A useful strategy for molecular modification and drug design	
Weeks 8, 9	Thermodynamics of drug-target interaction	
Week 10	Binding kinetics (Residence time as a predictor of drug in vivo efficacy)	
Week 11	Quantitative structure-activity relationship QSAR	
Week 14	Enzyme kinetics	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Differentiate critically the key milestones in the rational drug design process and evaluate their roles in pharmaceuticals development [1PLO-MP1][1L9K1]	12%	
Extract structure-activity and structure-property relationships from experimental data, applying these insights to guide drug design and optimization. [1PLO-MP2][1L9S3]	19%	

Assess various strategies applied in lead-to-drug optimization process, considering their impact on drug efficacy, safety, and development timelines. [1PLO-MP2] [1L9S3]	33%	
Examine early drug discovery studies across a variety of drug classes, analyzing the methodologies, challenges, and successes specific to each class [1PLO-MP2] [1L9C1]	16%	
Evaluate medicinal chemistry literatures, assessing the quality, relevance, and contributions of key studies to current drug discovery and development practices [1PLO-MP4] [1L9C6]	20%	

Relationship to Program Student Outcomes (O																						
PLO-PT1.1	PLO-PT2.1	PLO-PT2.2	PLO-PT3.1	PLO-PT3.2	PLO-PT3.3	PLO-PT3.4	PLO-PT3.5	PLO-PT3.6	PLO-PT3.7	PLO-PT3.8	PLO-PT3.9	PLO-MP1	PLO-MP2	PLO-MP3	PLO-MP4	PLO-PET1.1	PLO-PET2.1	PLO-PET2.2	PLO-PET2.3	PLO-PET3.1	PLO-PET3.2	
												12	68		20							

Relationship to NQF Outcomes (Out of 100%)			
L9K1	L9C1	L9S3	L9C6
12	16	52	20

Evaluation	
Assessment Tool	Weight
First exam	25%
Second exam	15%
Assignments	10%
Final exam	50%

Policy	
Attendance	Attendance at all scheduled lectures is mandatory. Students absent from lectures will not receive marks for any assignments or in-class discussions conducted during their absence.
AI use	AI platforms may be used to refine or edit your writing, but they must not be used to generate content from scratch. Any use of AI tools must be explicitly acknowledged in your submission.
Participation	All students are expected to actively participate in class discussions.
Assigned tasks	All students must be prepared to present or discuss their assignments on the scheduled dates. Failure to do so will result in a deduction of the marks allocated for this component.

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