Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR728 Advanced Pharmacokinetics/ Pharmacodynamics - JNQF Level: 9

First Semester 2024-2025

Course Catalog
3 Credit Hours. This course provides an overview of the different aspects of pharmacokinetics and pharmacodynamics of drugs. Those include different features of drug absorption, distribution, metabolism and excretion in addition to drug target (receptor, enzyme, transporter, etc.) interactions. The course also emphasizes on analysis and interpretation of kinetics data, and the clinical application of theories describing drug kinetics.
Teaching Method: On Campus

Text Book	
Title	Concepts in Clinical Pharmacokinetics
Author(s)	William J. Spruill, William E. Wade, Joseph T. DiPiro, Robert A. Blouin, and Jane M. Pruemer
Edition	7th Edition
Short Name	Ref #1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Clinical Pharmacokinetics & Pharmacodynamics: Concepts & Applications	Malcolm Rowland & Thomas N. Tozer	5th Edition	

Instructor	
Name	**Dr. Osama Alshogran**
Office Location	P2-L-2
Office Hours	
Email	oyalshogran@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Tue : 10:30 - 13:30 Room: قاعة الكندي/صيدلة

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Syllabus Distribution and course introduction	
Week 2	Review of PK concepts (first and second order kinetics)	**Chapter 2&3** From **Ref #1**, **Chapter 3** From **Ref #2**
Week 3	Review of PK concepts (clearance and volume of distribution) / Simulation exercises	**Chapter 8&9** From **Ref #1**, **Chapter 4&5** From **Ref #2**
Week 4	Clinical aspects of IV infusion and multiple dosing (Simulation exercises)	**Chapter 4&5** From **Ref #1**, **Chapter 10&11** From **Ref #2**
Week 5	Literature paper discussion	
Weeks 6, 7	Model drugs & therapeutic drug monitoring: clinical applications	**Chapter 12-15** From **Ref #1**
Week 8	Midterm Exam	
Week 9	Enzyme kinetics	**Chapter 10** From **Ref #1**, **Chapter 16** From **Ref #2**
Week 9	Drug absorption and bioavailability	**Chapter 7** From **Ref #1**, **Chapter 6-7** From **Ref #2**
Week 10	Drug transport and its clinical applications	
Week 11	Literature paper discussion	
Week 12	Design of clinical PK studies	
Week 13	Pharmacokinetics in special population (elderly, pediatrics, and pregnancy)	

Week 14	Pharmacogenetics: PK and PD considerations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Demonstrate understanding of foundational PK concepts [1PLO-PET2.1] [1L9K1]	10%	
Illustrate and apply the concepts of therapeutic drug monitoring in selected patient population [1PLO-PET2.3] [1L9S2]	40%	
Demonstrate skills to solve PK questions and interpret literature data [1PLO-PET2.3] [1L9S3]	40%	
Utilize simulation programs to solve PK questions and design PK studies [1PLO-PET2.3] [1L9S3]	10%	

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	L9S2	L9S3
10	40	50

Evaluation	
Assessment Tool	**Weight**
Midterm Exam	30%
Assignments and oral presentation	20%
Final exam	50%

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