Jordan University of Science and Technology

Faculty of Pharmacy

Doctor Of Pharmacy (Pharm D.) Department

PHMD355 Biopharmaceutics And Pharmacokinetics - JNQF Level: 7

First Semester 2023-2024

Course Catalog
3 Credit Hours. This course (3.0 credits) includes a study of the physicochemical and biological factors involved in the absorption, distribution, and elimination of drugs as well as the method of calculating drug levels in blood and urine after single or multiple dosing by extravascular or intravenous routes. In addition to the concepts of bioavailability and bioequivalence.

Text Book	
Title	Applied Biopharmaceutics and Pharmacokinetics
Author(s)	Murray P. Ducharme, Leon Shargel
Edition	8th Edition
Short Name	Ref#1
Other Information	McGraw-Hill's (2022)

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	Basic Pharmacokinetics	Sunil S. Jambhekar and Philip J. Breen	2nd Edition	Pharmaceutical Press (2009)

Instructor	
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Instructor	
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Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 10:30 - 11:30 Room: P1103 Section 2: Lecture Time: Mon, Wed : 13:00 - 14:00 Room: PH2104

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
312520	PHMD252 Pharmaceutics 1	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to biopharmaceutics and pharmacokinetics	**Ch1** From **Ref#1**, **Ch1** From **Ref#2**
Week 2	Mathematical fundamentals in pharmacokinetics	**Ch2** From **Ref#1**, **Ch2** From **Ref#2**
Weeks 2, 3, 4	One-compartment open model: Intravenous bolus administration	**Ch3** From **Ref#1**, **Ch3** From **Ref#2**
Weeks 5, 6	Drug elimination and clearance concepts	**Ch6** From **Ref#1**, **Ch4** From **Ref#2**
Weeks 6, 7, 8	Pharmacokinetics of oral absorption	**Ch7** From **Ref#1**, **Ch5&6** From **Ref#2**
Week 9	Bioavailability and bioequivalence	**Ch15** From **Ref#1**, **Ch7** From **Ref#2**
Weeks 10, 11	Intravenous infusion	**Ch5** From **Ref#1**, **Ch10** From **Ref#2**
Weeks 12, 13	Multiple dosage regimens	**Ch8** From **Ref#1**, **Ch11&12** From **Ref#2**
Week 14	Nonlinear pharmacokinetics	**Ch9** From **Ref#1**, **Ch15** From **Ref#2**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the different terms used in pharmacokinetics that describe the different ADME processes that affect drugs exposure [1PLO1.1] [1L7K1]	5%	
Review the basic calculations needed for pharmacokinetic analysis [1PLO1.1] [1L7K1]	4%	
Utilize the mathematical models that describe drug disposition to analyze PK data after single intravenous administration [1PLO1.1] [1L7S1, 1L7C2]	21%	
Apply the needed PK models to analyze PK data after single extravascular administration [1PLO1.1] [1L7S1, 1L7C2]	13%	
Apply the needed PK analysis to evaluate the bioavailability & bioequivalence of dosage forms administered by extravascular routes [1PLO1.1] [1L7S1, 1L7C2]	5%	
Demonstrate how to analyze data after continuous and discontinued intravenous infusion in the presence and absence of loading intravenous bolus or zero-order infusion [1PLO3.1] [1L7S1, 1L7C2]	18%	
Compute drugs plasma exposure after multiple intravenous or extravascular administration before and at reaching steady-state [1PLO3.2] [1L7S1, 1L7C2]	23%	
Identify the reasons for nonlinear PK behavior and their characteristic signs in PK data and apply the Michaelis-Menten equation to analyze such data after different dosing regimens [1PLO3.2] [1L7S1, 1L7C2]	11%	

Relationship to Program Student Outcomes (Out of 100%)															
PLO1.1	PLO2.1	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.2	PLO3.3	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1
48					18	34									

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S1	L7C2
9	45.5	45.5

Policy	
Exams	- All exams are closed books and notes. - The final exam is comprehensive (covers all the material). - The first, second, and midterm incomplete exams need approval from the departments? heads. - The final incomplete exams need approval from the dean.

Cheating	Prohibited; 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. Standard JUST policy will be applied. المادة 7: إذا ضُبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة: أ- اعتباره راسباً في ذلك الامتحان أو الاختبار. ب- الغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل. جـ- فصله من الجامعة لمدة فصل دراسي واحد، و هو الفصل التالي للفصل الذي ضبط فيه.
Attendance	- Attendance is mandatory and will be recorded regularly. - Excellent attendance is expected. - Students who miss more than 20% of the classes will be dropped from the course as per JUST policy. - If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Active learning and students & participation	- Students are expected to actively participate in class discussions. - Some topics are self-reading and they worth to 10 points from the course evaluations
Withdraw	The last day of courses withdrawal (without reimbursement of tuition fees) is the day before the 1st day of final examination period

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