Jordan University of Science and Technology
Faculty of Pharmacy
Doctor Of Pharmacy (Pharm D.) Department

PHMD358 Clinical Pharmacokinetics - JNQF Level: 7
Second Semester 2023-2024

Course Catalog
3 Credit Hours. This course applies the basic principles of pharmacokinetic science to optimize dosing regimens in patients based on plasma concentration data obtained from therapeutic drug monitoring (TDM). The students will be exposed to examples of drug classes that represent prototypes of main drug categories based on their pharmacokinetic criteria. The students are expected to deal with troubleshooting issues faced in the clinic related to drug dosing regimen adjustments needed based on TDM.
Teaching Method: Blended

Text Book	
Title	Concepts in Clinical Pharmacokinetics
Author(s)	Joseph T. DiPiro et. al.
Edition	6th Edition
Short Name	Ref#1
Other Information	https://drive.google.com/file/d/1etme9wW2XE8XPVAxcDLahkZaADdnfFnM/view?usp=sharing

Instructor	
Name	**Dr. Ruba Darweesh**
Office Location	M5-L0
Office Hours	Sun : 11:30 - 12:30 Sun : 13:30 - 14:30 Mon : 08:30 - 09:30 Tue : 11:30 - 12:30 Tue : 13:30 - 14:30 Thu : 09:30 - 10:30
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Instructor	
Name	**Dr. Mo'tasem Alsmadi**
Office Location	P1-L1
Office Hours	Sun : 09:30 - 11:00 Mon : 13:00 - 14:30 Tue : 09:30 - 11:00 Wed : 13:00 - 14:30
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Class Schedule & Room

Section 1:
  Lecture Time: Sun, Tue : 12:30 - 13:30
  Room: SOUTH HALL
 	
Section 4:
  Lecture Time: Mon, Wed : 10:00 - 11:30
  Room: P1103

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
313550	PHMD355 Biopharmaceutics And Pharmacokinetics	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction and terminology (Active learning)	**CH1** From **Ref#1**
Week 2	Basic PK calculations after IV-bolus dosing (Active learning)	**CH2 & CH3** From **Ref#1**
Week 2	Oral absorption (single dose)	**CH7** From **Ref#1**
Week 3	Multiple intravascular and extravascular dosing and steady state concentration	**CH4 & CH5 & CH7** From **Ref#1**
Week 4	Protein binding & Drug distribution	**CH8** From **Ref#1**
Week 5	Hepatic and renal drug elimination	**CH9** From **Ref#1**
Week 7	PK variation (Active learning)	**CH11** From **Ref#1**
Week 7	Model-independent relationships	**CH11** From **Ref#1**
Week 8	IV infusion	**CH4** From **Ref#1**
Week 9	Theophylline	**14** From **Ref#1**
Week 10	Digoxin	**CH15** From **Ref#1**
Week 12	Aminoglycosides	**CH12** From **Ref#1**
Week 13	Two compartments model	**CH6** From **Ref#1**
Week 13	Vancomycin	**CH13** From **Ref#1**
Week 14	Nonlinear processes	**CH10** From **Ref#1**
Week 15	Phenytoin	**CH15** From **Ref#1**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Apply the basic pharmacokinetic terminology and mathematical principles to pharmacokinetic data after a single intravenous bolus dose of drugs with linear pharmacokinetics [1PLO1.1, 1PLO3.1] [1L7K1, 1L7S1]	7%	First Exam
Solve pharmacokinetic problems after a single extravascular dose of drugs with linear pharmacokinetics [1PLO1.1, 1PLO3.1] [1L7S2, 1L7C2]	4%	First Exam
Design suitable dosing regimens of multiple intravenous bolus and multiple extravascular doses of drugs with linear pharmacokinetics [1PLO2.1, 1PLO2.2, 1PLO2.3] [1L7S2, 1L7C3]	7%	First Exam
Examine the effect of plasma and tissue binding on the rate and extent of drug distribution [1PLO1.1, 1PLO3.1] [1L7K1, 1L7S1]	5%	First Exam
To investigate the effect of renal and hepatic elimination on drug exposure [1PLO1.1, 1PLO3.1] [1L7K1, 1L7S1]	7%	First Exam
Evaluate factors that affect intersubject variability in drugs ADME processes and their possible effect on required dosing regimens [1PLO1.1, 1PLO3.1] [1L7K1, 1L7S1]	3%	Second Exam
To assess pharmacokinetic data using a model-independent (non-compartmental pharmacokinetic analysis (NCA)) approach for drugs with linear pharmacokinetics [1PLO1.1, 1PLO2.1] [1L7S2, 1L7C3]	7%	Second Exam
To apply the single IV-infusion equations on the therapeutic monitoring of renally and hepatically eliminated drugs (e.g. theophylline, digoxin) with a one-compartment model [1PLO2.1, 1PLO2.2, 1PLO2.3, 1PLO3.1, 1PLO3.3] [1L7K1, 1L7S3, 1L7C4]	20%	Second Exam
To apply the multiple IV-infusion equations on the therapeutic monitoring of renally eliminated drugs with a one-compartment model (e.g. aminoglycosides) and a two-compartment model (e.g. vancomycin) [1PLO2.1, 1PLO2.2, 1PLO2.3, 1PLO3.1, 1PLO3.3] [1L7K1, 1L7S3, 1L7C4]	26%	Final Exam
To apply the nonlinear pharmacokinetic equations on the therapeutic monitoring of drugs undergoing nonlinear hepatic metabolism (e.g. phenytoin) [1PLO2.1, 1PLO2.2, 1PLO2.3, 1PLO3.1, 1PLO3.3] [1L7K1, 1L7S3, 1L7C4]	14%	Final Exam

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
16.5	17.83	14.33	14.33		25		12								

Relationship to NQF Outcomes (Out of 100%)

L7K1	L7S1	L7S2	L7S3	L7C2	L7C3	L7C4
31	11	9	20	2	7	20

Evaluation

Assessment Tool	Weight
First Exam	30%
Second Exam	30%
Final Exam	40%

Policy

Exams	1) The exams will be calculation-based in addition to questions about basic understanding of clinical pharmacokinetics concepts 2) Grades will not be announced by e-mail
Cheating	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
Attendance	1. Excellent attendance is expected for both in class and synchronous online sessions. 2. J.U.S.T. policy requires the faculty member to assign ZERO grade (35) if a student misses 10% of the classes without valid excuse approved by the dean according to the university rules. 3. If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed.
Participation	Participation is expected from each students in discussions made in class which is useful to both the students who participate by hum-self and his attending colleagues
Withdraw	The last day of courses withdrawal (without reimbursement of tuition fees) is one day before the final exam date

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