



الجامعة الزيتونة الأردنية  
Faculty of Pharmacy  
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "  
Toward Excellence in Pharmaceutical  
Education

الجامعة الزيتونة الأردنية  
Al-Zaytoonah University of Jordan  
كلية الصيدلة  
Faculty of Pharmacy



" Tradition and Quality "

<b>Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department</b>	<b>QF02/0408-3.0E</b>
---	-----------------------

Faculty	Pharmacy	Department	Pharmacy
Course number	201761	Course title	Advanced Biopharmaceutics & Pharmacokinetics
Number of credit hours	2	Pre-requisite/co- requisite	-----

### Brief course description

This course is intended to equip the M.Sc. students with the necessary knowledge about advanced topics in biopharmaceutics and pharmacokinetics like nonlinear pharmacokinetics, dosage adjustment in special populations, protein binding and pharmacokinetics and therapeutic drug monitoring

Course goals and learning outcomes	
<b>Goal 1</b>	To provide understanding of the advanced skills necessary to solve pharmacokinetic problems
Learning outcomes	The student should be able to 1.1 understand the compartmental modeling and its significance 1.2 determine the inter-relationship between binding and clearance parameters of the medications 1.3 solve problems that can be addressed in the real world of pharmacokinetics
<b>Goal 2</b>	To equip the student with knowledge of nonlinear pharmacokinetics
Learning outcomes	The student should be able to: 2.1 differentiate between linear and nonlinear pharmacokinetics 2.2 understand the parameter alterations that occur in nonlinear pharmacokinetics
<b>Goal 3</b>	To enable the student to design a dosage regimen for an individual patient
Learning outcomes	The student should be able to: 3.1 design a safe and effective dosage regimen based on the linear and nonlinear pharmacokinetics of medications 3.2 illustrate the concept of accumulation in the case of linear and nonlinear pharmacokinetics 3.3 design safe and effective regimen in individual patients or patients within specific populations
<b>Textbook</b>	1.- Biopharmacokinetics and Pharmacokinetics by Shargel. 2.- Pharmacokinetics by Gibaldi.
<b>Supplementary references</b>	1.- www.boomer.org



الجامعة الزيتونة الأردنية  
Faculty of Pharmacy  
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "  
Toward Excellence in Pharmaceutical  
Education

الجامعة الزيتونة الأردنية  
Al-Zaytoonah University of Jordan  
كلية الصيدلة  
Faculty of Pharmacy



"Tradition and Quality"

Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E
---	----------------

Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	<b>Basic Pharmacokinetics:</b>  Kinetic processes review. Compartments model.	Chapter 1, 3, 4	
	1			
02	1	IV bolus dosing. IV infusion dosing.	Chapter 3, 5	
	1			
03	1	Oral dosing. Bioavailability studies	Chapter 7, 15	
	1			
04	1	<b>Non – Linear Pharmacokinetics:</b>  Saturable enzymatic elimination processes. Drug elimination by capacity limited pharmacokinetics. Non – linear pharmacokinetics due to drug – protein binding.	Chapter 9	
	1			
05	1	<b>Relationship between pharmacokinetics and pharmacodynamics:</b>  Relation of dose to pharmacologic effect. Factors affect the duration of action. Rate of drug absorption and pharmacodynamic response	Chapter 19	
	1			
06	1	<b>Application of PK in Clinical Situations</b>	Chapter 20	
	1			
07	1	<b>MID – TERM EXAM</b> -calculation of plasma concentration, calculation of t max		
	1			
08	1	<b>Dose adjustment in renal and hepatic disease:</b>	Chapter 21	



Faculty of Pharmacy  
Al-Zaytoonah University of Jordan  
" نحو تعليم صيدلاني متميز "

Toward Excellence in Pharmaceutical  
Education

الزيتونة الأردنية  
Al-Zaytoonah University of Jordan  
كلية الصيدلة  
Faculty of Pharmacy



"Tradition and Quality"

Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E
---	----------------

	1	General approaches for dose adjustment in renal disease. Measurement of GFR. Measurement of creatinine clearance. Dose adjustment for uremic patients. Effect of hepatic disease on pharmacokinetics. Fraction of drug metabolized. Hepatic blood flow and intrinsic clearance. Dosage consideration in hepatic disease		
09	1 1	<b>Mean Resident Time and Statistical Moment Theory:</b>  Mean Resident Time Statistical Moment Theory Selection of PK model	Chapter 8	
10	1 1	<b>Physiologic factors related to drug absorption:</b>  Nature of cell membranes. Passage of drugs across cell membranes. Effect of dosage form on drug absorption. Effect of disease states on drug absorption.	Chapter 13	
11	1 1	<b>Physiologic drug distribution and protein binding:</b>  Physiologic factors of distribution. Protein binding of drugs. Determinants of protein binding. Kinetics of protein binding. Clinical significance of drug protein binding.	Chapter 13	
12	1 1	<b>Therapeutic drug monitoring</b>	Articles	
13	1 1	<b>Therapeutic drug monitoring</b>	Articles	
14	1 1	<b>SEMINAR DISCUSSION</b>		
15	1	<b>SEMINAR DISCUSSION</b>		



الجامعة الزيتونة الأردنية  
Faculty of Pharmacy  
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "  
Toward Excellence in Pharmaceutical  
Education

الجامعة الزيتونة الأردنية  
Al-Zaytoonah University of Jordan  
كلية الصيدلة  
Faculty of Pharmacy



" Tradition and Quality "

<b>Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department</b>	<b>QF02/0408-3.0E</b>
---	-----------------------

	1			
16	1 1	<b>FINAL EXAM</b>		

<b>Theoretical course evaluation methods and weight</b>	Medterm exam 30% Seminar discussion 30% Final exam 40%	<b>Practical (clinical) course evaluation methods</b>	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 40%
---	---	---	---

<b>Approved by head of department</b>	Dr. Abdel Qader Al Bawab	<b>Date of approval</b>	
---	-----------------------------	-------------------------	--

Extra information (to be updated every semester by corresponding faculty member)

<b>Name of teacher</b>	Dr. Abdel Qader Al Bawab	<b>Office Number</b>	<b>418</b>
<b>Phone number (extension)</b>	471	<b>Email</b>	<a href="mailto:abdelqader.albawab@zug.edu.jo">abdelqader.albawab@zug.edu.jo</a>
<b>Office hours</b>	12-2 p.m. daily		