COURSE DESCRIPTIONS

Faculty	**Pharmacy**				
Department	**Pharmacy**			**NQF level**	9
Course Title	Advanced Biopharmaceutics &Pharmacokinetics	**Code**	901703	**Prerequisite**	-
Credit Hours	2	**Theory**	2	**Practical**	0
Course Leader	Prof. Dr. Ahmed Gardouh				
Lecturers*	Prof. Dr. Ahmed Gardouh	**email**	Ahmed.ga@jadara.edu.jo		
Lecture Time	Saturday 13:00 -15:00	**Classroom**	D309		
Semester	2st sem. 2023/2024	**Production**	**Updated**	Feb 2023	
Awards			**Attendance**	Obligatory	
Type of Teaching	■Face to Face ☐Blended ☐ Online				

Short Description
This course provides an in-depth exploration of advanced Pharmacokinetic methods used in pharmaceutical research and clinical investigations. Through a combination of theoretical lectures, hands-on problem solving, and case studies, students will develop a thorough understanding of the principles, techniques, and applications of modern pharmacokinetic theories . Emphasis will be placed on different mathematical modeling methods, as well as mass emerging technologies and programs.

Learning Outcomes
a. Knowledge - theoretical and practical understanding
a1. Identify the fundamental principles underlying various pharmacokinetic models .(K1) **a2**. Describe the pharmacokinetic parameters used in pharmaceutical research.(K1) **a3**. Explain the theoretical basis of data acquisition, and data interpretation in pharmacokinetic analysis.(K1)
b. Skills - problem solving, analytical, communication, ICT*, and numeracy
b1. Apply appropriate pharmacokinetic techniques to solve complex problems in diverse scientific contexts.(S1) **b2**. Interpret experimental data obtained from using statistical methods and data visualization techniques.(S1)
c. Competence - autonomy, responsibility, and context
c1. Demonstrate proficiency in dealing with complex pharmacokinetic cases.(C2) **c2**. Communicate effectively about pharmacokinetics, results, and interpretations through written reports, oral presentations, and graphical representations. (C2) **c3**. Apply critical thinking and problem-solving skills to design and optimize bioequivalence methods for specific applications and research questions.(C2)

Teaching and Learning Methods
✓ Face to Face Lectures ☐ Brain Storming ✓ Synchronous remote ☐ Asynchronous remote ✓ Using Video ✓ Discussions ✓Research Project ✓ Case Study ☐ Field visit ✓ Problem solving
Assessment Methods
☐ Formative Assessment ✓ Quiz ☐ Lab Exam ✓Homework ☐ Project Assessment ✓ Oral Presentation ✓ Midterm ✓ Final Exam

Teaching and Learning Methods
• Lectures (show slides presentations) • Discussion (during e.g. Q&A time or sessions) • Brainstorming (during e.g. problem-based learning; PBL seminars) • Instructional technologies (e.g. video tutorials)
Assessment Methods
Multiple choice (MC) exams and problem solving with graphing

*ICT stands for “information and communication technology”, and ICT skills include those skills of using software tools

	Course				
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1-2	4	a1, a2, a3	**Intravenous infusion** -Overview -Basic principles - parameters	Lectures, discussion	Exams
3-4	4	a1, a2, a3, b1,b2, c1,c2, c3	**Drug elimination and clearance** - Principles - Drug elimination mechanisms - Clearance importance	Lectures, discussion	Exams
5-6	4	a1, a2, a3, b1,b2,b 3,c1,c2, c3	**Multiple dosage regimen:** -principles -calculation of parameters	Lectures, discussion Problem solving	Exams

7	2	a1, a2, a3, b1,b2,b 3,c1,c2, c3	**Non linear pharmacokinetics** - principles - parameter calculations	Lectures, discussion	Exams
Midterm exam					
8	2	a1, a2, a3, b1,b2,b 3,c1,c2, c3	**Non compartmental pharmacokinetics**	Lectures, discussion	Exams
9-11	3	a1, a2, a3, b1,b2,c1 ,c2,c3	**Metabolite pharmacokinetics**	Lectures, discussion	Exams
12	3	a1, a2, a3, b1,b2,c1 ,c2,c3	**An Overview of Therapeutic Drug Monitoring (TDM)**	Work group and student activities	Exams
Final Exam					

Learning Sources	
Main Textbook (Main TB)	3rd Edition Basic Pharmacokinetics By Mohsen A. HedayaCopyright 2024 ISBN 9780367752156 464 Pages 169 B/W Illustrations Published September 13, 2023 by Routledge
Other Textbooks	**Applied Pharmacokinetics & Pharmacodynamics Principles of Therapeutic Drug Monitoring** Reviewed by: Pamela J Sims [1] Michael E Burton, Leslie M Shaw, Jerome J Schentag. and William E Evans.. Applied Pharmacokinetics & Pharmacodynamics Principles of Therapeutic Drug Monitoring.2006. Lippincott Williams & Wilkins. 867. $(hardcover) ISBN0-7817-4431-8. https://www.e-pharmacokinetics.com/epharma/index.php

Electronic Materials	
Other	In addition to the above, the students will be provided with the handouts* by the lecturer

* These are tertiary sources and should be only considered as guides but not substitute to the text books (secondary sources) and journal papers (incl. primary sources) on the websites listed above

Course Assessment Plan								
Assessment Method		**Grade**	**CILOs***					
			a1	**a2**	**b1**	**b2**	**c1**	**c2**
First (or Midterm) Exam		30	10	10	10			
Final Exam		40	5	5	5	5		20
Coursework		30						
	Student activity		10			10		10
Total		100	50			15		35

***CILOs stands for the "course intended learning outcomes", which are intended to feed-up to the PILOS, the "program intended learning outcomes"**

Plagiarism

Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).

Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.