Course E-Syllabus

1	**Course title**	Clinical Pharmacokinetics clerkship
2	**Course number**	1203607
3	**Credit hours**	2 (practical)
	Contact hours (theory, practical)	2 (practical)
4	**Prerequisites/corequisites**	
5	**Program title**	PharmD
6	**Program code**	
7	**Awarding institution**	The University of Jordan
8	**School**	Pharmacy
9	**Department**	Biopharmaceutics & Clinical Pharmacy
10	**Level of course**	undergraduate
11	**Year of study and semester (s)**	6th year
12	**Final Qualification**	PharmD
13	**Other department (s) involved in teaching the course**	None
14	**Language of Instruction**	English
17	**Date of production/revision**	17/10/2023

18 Course Coordinator:

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19 Other instructors:

Dr Hiba Fahmawi
Dr Lina Alsous
Dr Dunia Abu dalou

Course Description:

The clerkship in clinical pharmacokinetics is intended to allow PharmD students an opportunity to acquire the practical experience in the application of clinical pharmacokinetic principles to various drug therapies with emphasis on the selection and design of antimicrobial therapies. Students will learn how to apply these principles by gathering pertinent clinical information, development of pharmaceutical care and monitoring plans, thorough literature evaluation, and case discussions.

Course aims and outcomes

A- Aims:

1 This course aims to:

- Allow students to apply knowledge of pharmacokinetic principles to design optimal drug dosage regimens for individual patients taking into account their clinical and demographic characteristics.
- Establish a standardized pharmacokinetic monitoring approach for patients receiving drugs that are routinely monitored utilizing serum drug concentrations.

Descriptors	**CLO No.**	**SLOs of the program (PLOs)** **SLOs of the course (CLOs)**	**Care giver**	**Educator**	**Problem solver**	**Professional**
Knowledge	**K 1**	Discuss and understand the basic pharmacokinetic principles and key pharmacokinetic parameters.				
	K 2	Discuss and understand various aspects of a drug's pharmacokinetic properties and factors affecting them. .				
	K 3	Discuss the effect of different disease states on the pharmacokinetics and pharmacodynamics of drugs. Understand the theoretical basis of therapeutic drug monitoring.				
Skills	**S1**	Perform calculations to predict drug concentration after drug administration.				
	S2	Recommend initial dosage regimen or adjust dosage and recommend monitoring strategy to ensure safe and effective drug therapy.				
Competencies	**C1**	Recommend necessary modifications to patient therapy to optimize its safety and efficacy				

2. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended/ Fully Online)	Evaluation Methods	Resources
1	1.1	*Vancomycin kinetics presentation and discussion *Examples of case calculations (Initial dose determination, revised K method, pharmacokinetic concept method) *Distribution of vancomycin cases	K1-K3	Face to Face	Creatinine clearance estimation pre-assessment quiz 1 (self-reading material)	Textbook, handouts
	1.2	Patient database collection from JUH	S1/S2	Face to Face	Exam	Textbook, handouts
2	2.1	Digoxin kinetics presentation and discussion Examples of case calculations (Initial dose determination, linear pharmacokinetics method, pharmacokinetics parameter method) Valproic acid presentation and discussion Examples of case calculations (Initial dose determination, pseudo-linear pharmacokinetics method) *Case follow up	K1-K3	Face to Face	Exam	Textbook, handouts
	2.2	Patient database collection from JUH	S1/S2	Face to Face	Exam	Textbook, handouts
	3.1	*Phenytoin presentation and discussion *Examples of case calculations (Dose calculation using Michaelis-Menten equation, orbit graph *determination, and the effect of low albumin on phenytoin concentration) *Distribution of phenytoin cases Case follow-up	K1-K3	Face to Face	• Phenytoin pre-assessment quiz 2 • Exam	Textbook, handouts

Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended/ Fully Online)	Evaluation Methods	Resources
	3.2	Patient database collection from JUH	S1/ S2	Face to Face	Case discussion	Textbook, handouts
	4.1	*Aminoglycosides kinetics presentation and discussion *Examples of case calculations (Initial dose determination, pharmacokinetic concept method) *Cyclosporine kinetics presentation and discussion *Examples of case calculations ((Initial dose determination, linear pharmacokinetic method, and pharmacokinetic parameter method) *Case follow up	K1-K3	Face to Face	Aminoglycoside pre-assessment quiz 3 Exam	Textbook, handouts
	4.2	Patient database collection from JUH	S1/ S2	Face to Face	Case Discussion	Textbook, handouts
	5.1	Case 1 and 2 formal discussions	S1/ S2	Face to Face	Case Discussion	Textbook, handouts

- Teaching methods include: Face-Face lecturing; synchronous Ms meeting
- Evaluation methods include Homework, Quiz, Exam, pre-lab quiz…etc

Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	CLOs	Period (Week)	Platform
Quizzes	25	As mentioned above	K1	1-13	On campus
Manuals /Case Discussion	35		K1/K2/K3, S1, S2 & C1	12th week	On campus
Final Exam	40	All Topics	K1, K2, K3, S1 & S2	15th week	On campus

Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):

Course Policies:

A- Attendance policies: absence is not allowed.

B- Late submission of manual: one mark will be deducted for each late day (up to 3 days, otherwise, the mark will be zero).

C- Absence from formal discussion: no second chance will be given

D- Absences from exams, pre-assessment and post-assessment quiz: no second chance will be given

E- Health and safety procedures:

NA

F-

D- Honesty policy regarding cheating, plagiarism, misbehavior:

The participation, the commitment of cheating will lead to applying all following penalties together

1) Failing the subject he/she cheated at

2) Failing the other subjects taken in the same course

3) Not allowed to register for the next semester. The summer semester is not considered as a semester

G- Grading policy:

F- Available university services that support achievement in the course:

References:

A- Required book(s), assigned reading and audio-visuals:

1. **Basic clinical pharmacokinetics, By Michael E. Winter. Edition: 5 – 2009**
2. **Applied clinical pharmacokinetics, By Larry Bauer. Edition: 2 – 2008**
3. **Applied pharmacokinetics & pharmacodynamics: principles of therapeutic drug monitoring, By Michael E. Burton. Edition: 4 – 2006**
4. **Pharmacotherapy: A Pathophysiological Approach, ed. DiPiro *et al*, 8th edition, 2011.**

Other Useful References:

1. **Clinical pharmacokinetics: concepts and applications, By Malcolm Rowland, Thomas N. Tozer. Edition: 4 – 2010**
2. **Handbook of drug monitoring methods: Therapeutics and Drugs of Abuse, By Amitava Dasgupta. Edition: 1 – 2008**
3. **Concepts in Clinical Pharmacokinetics, By Joseph T. DiPiro. Edition:5 – 2010**
4. **Applied Biopharmaceutics & Pharmacokinetics, By Leon Shargel *et al.* Edition:6 – 2012**
5. **Introduction to pharmacokinetics and pharmacodynamics: the quantitative basis of drug therapy, By Thomas N. Tozer, Malcolm Rowland. Edition 1: 2006**

B- **Relevant original and review articles from scientific journals**

B- Recommended books, materials and media:
Other learning resources:

1. Access Pharmacy: http://accesspharmacy.mhmedical.com/
2. UpToDate: www.uptodate.com

27 Additional information:

Name of Course Coordinator: Dr. Maysa Abu Qamar Signature: ---------- Date:17/10/2023

Head of Curriculum Committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of Curriculum Committee/Faculty: ---------- Signature: ----------

Dean: ---------- Signature: ----------