Syllabus: Pharmacokinetics theory (#1917021343)

Second Semester 2021 /2022

COURSE INFORMATION	
Course Name: Pharmacokinetics theory (face-to-face education) **Semester:** Second **Department:** Clinical Pharmacy & Pharmacy Practice **Faculty:** Pharmaceutical Sciences	**Course Code:** 1917021343 **Section:** 1, 2 and 3 **Core Curriculum**: 2013 Study Plan
Day(s) and Time(s): Sun + Tues: 12:00 – 13:00 Mon + Wed: 12:00 – 13:00 **Classroom:** Pharmaceutical Sciences	**Credit Hours:** 2 **Prerequisites**: 1317011342

COURSE DESCRIPTION

This course focuses on basic pharmacokinetic principles, discusses time concentration curve and aims at teaching students how to calculate drug levels in blood and in urine after various administrations (IV bolus, IV infusion, oral, single dosing and multiple dosing) by solving various practice problems.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These include:

- PowerPoint lectures and active classroom-based discussion
  Students will be encouraged to participate and be actively involved in the learning process. Lectures will start with questions to inquire about the students' prior knowledge of the topic. These questions will also be repeated at the end of the lecture to gain insight into the students' competences (to verify whether students have understood the topic). During delivering the lecture presentation, time will be given to allow students to reflect about what they have learnt and think in and discuss some examples of short case studies.

FACULTY INFORMATION

Name	**Dr Khaled Jamal ALROSAN**
Academic Title:	**Assistant Professor**
Office Location:	**Third Floor**
Telephone Number:	**Extension: 3418**
Email Address:	**Kalrosan@hu.edu.jo**
Office Hours:	**According to the semester**

REFERENCES AND LEARNING RESOURCES

:(Required Textbook(s

*Either you list book as (*Author ***Title*** (Publisher: 2009) ISBN: 1-4039-742x-x *) or you can state: There is no required .textbook for purchase. All compulsory weekly readings are available electronically on Model/Microsoft Teams*

1. **Applied Biopharmaceutics & Pharmacokinetics,** 6th edition, 2012, Leon Shargel, Susanna Wu-Pong, Andrew Yu
2. **Basic Pharmacokinetics**, 2nd edition, 2012, Sunil S. Jambhekar and Philip J. Breen P. ISBN 978 0 85369 980 4. Great Britain by TJ International, Padstow, Cornwal.

Suggested Additional Resources:

3. Range and Dale's Pharmacology E-book, 2020.

:Useful Web Resources

https://www.boomer.org/c/p4

Course Objectives

The objectives of this course are:

1. To provide the student with the required information about the role of pharmacists in drug monitoring and designing dosing regimens by relating plasma concentration of drugs to their pharmacological and toxicological action
2. To introduce the student to the basic mathematical skills related to pharmacokinetics.

Intended Learning Outcomes

A. **Knowledge and Understanding:** When students have completed the programme they will have knowledge and understanding of:

A1. Student should gain several competencies in understanding the time course of Absorption, Distribution, Metabolism, and Excretion (ADME) of drugs in the body.

A2. Student should understand the concept of individualization of therapy and therapeutic drug monitoring

A3. Identify the difference between different compartmental models demonstrated during drug movement course in human body after administration.

B. **Essential for Practice and Care (Intellectual Skills):** When students have completed the course they will be able to:

B1. Become a health care provider who's able to provide patient-centered care as the medication expert and as a dosage regimen designer (this includes: collect and interpreting evidence about dosage forms and drug's concentration time profile, in addition to, prioritizing, formulating assessments and recommending, implementing, and monitoring medications)

B2. Design prevention, intervention, and educational strategies for individuals and communities to manage chronic disease and improve health and wellness related to medications.

B3. Describe how population-based care influences patient-centered care and influences the development of practice guidelines and evidence-based best practices.

C. Approach to Practice Pharmacy: When students have completed the program they will be able to:

C1. Identify problems; explore and prioritize potential strategies; design, implement, and evaluate a viable solution related drug regimens**.(Problem solver)**

C2. Patient Advocacy **(Advocate)** - Assure that patients' best interests regarding drug administration from different dosage forms.

C3. Educator **(Educator)** – Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding regarding various medication dosage forms.

C4. Communication **(Communicator)** – Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization regarding various medication dosage forms

C5. (Collaborator) – Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs

D. **Personal and Professional Development:** When students have completed the course they will be able to:

D1. The student should be able to calculate and develop dosing regimens for specified drug administration drug cases

D2 Self-awareness (Self-aware) – Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth regarding his role as a pharmacist, the medication expert and health care provider concerning the effective dose regimens

D3. Professionalism (Professional) - Exhibit behaviours and values that are consistent with the trust given to the profession of pharmacy by patients, other healthcare providers, and society.

STUDENT LEARNING OUTCOMES MATRIX

An alignment matrix of the **program** ILOs of the Bachelor of Pharmacy at The Hashemite University, the **course** ILOs and knowledge, skills and competencies as mentioned in the Jordan National Qualifications Framework (JNQF)

Field according to (JNQF)	Required to achieve (according to (JNQF)	Core curriculum learning outcomes	B.Sc. Pharmacy Program ILOs	Course Objectives	Course Student ILOs						Assessment Method
					A	B	C	D			
Knowledge	A systematic understanding of the theories, concepts, principles and circulations related to the field of learning, some of which are within the limits of the latest scientific findings	Foundational Knowledge	Learner	1-2	A.1-A.3						First, Second and final exam
Skills	Mastering the skills and tools required to solve complex problems in a specialized field of study	Essentials for Practice and Care	Caregiver Manager Promoter Provider	1-2		B.1					
	Demonstrate specialized and conceptual skills in the field of study										
	Practice evaluation in planning, design, technical and/or supervisory functions related to products, services or processes	Approach to Practice and Care	Creative Thinker & Problem-Solver	1-2		B.2-B.3	C.1-C.5				
			Educator	1-2				D.1-D.2			
			Advocate	1-2							
			Collaborator					D.1-D.2			
			Includer								
			Communicator	1-2				D.3			
Competencies	Management of activities and projects	Personal & Professional Development Pharmaceutical Product Expert	Self-aware					D.2			
	Take responsibility for decision-making in work or study contexts		Leader Innovator								
	Take responsibility for group work and work effectively with peer guidance		Professional	1-2			C.1-C.5	D.2-D.3			
	Transfer and apply diagnostic and creative skills in a range of contexts		Manufacturer								

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:
Tel: 00962-5-3903333 Extension: 4209
Location: Students Affairs Deanship/ Department of Student Welfare Services
Email: **amalomoush@hu.edu.jo**
amalomoush@staff.hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

On average, students need to spend 15 hrs of study and preparation weekly. At the beginning of the lectures, be on time and don't leave before the end of the lecture without an accepted excuse. **If you missed a class, it is your responsibility to find out about any announcements or assignments you have missed.** For any clarification, please communicate your instructor at her posted office hours or by appointment. Listen well to the lecture, if you have a question, ask your instructor. You will find the course material at the course team after the lecture.

Sharing of course materials is forbidden. No course material including, but not limited to, course outline, lecture hand-outs, videos, exams, and assignments may be shared online or with anyone outside the class. Any suspected unauthorized sharing of materials, will be reported to the university's Legal Affairs Office. If a student violates this restriction, it could lead to student misconduct procedures.

Missed Assessments

In all cases of assessment, students who fails to attend an exam on the scheduled date without prior permission, .and/or are unable to provide a medical note, will automatically receive a failure grade for this part of the assessment

- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with university regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Cheating

Cheating, academic disconduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied. Cheating policy: The participation, the commitment of cheating will lead to applying all following penalties together:

- Failing the subject, he/she cheated at

- Failing the other subjects taken in the same course
- Not allowed to register for the next semester
- The summer semester is not considered as a semester

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

Assessment	Grade Weighting	Deadline Assessment
First Exam	30%	~ 6th week
Second Exam	30%	~ 10th week
Final Exam	40%	~ 15th /16th week

Description of Exams

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.

Grades are not negotiable and are awarded according to the following criteria:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

"Lecture hours and weeks are approximate and may change as needed"

Note: For the 2 lecture periods per week (S/T, M/W), one lecture period covers 1 lecture hours (60 minutes). The course content specifies chapters of the textbook that will be included in exams.

Introduction	**introduction, concepts, and the use of PK**	**Week 1**	**2 lectures**
Topic 1	**One compartment open model (IV bolus)**	**Week 2/3**	**3 lectures**
Topic 2	**Calculation of k from urinary excretion data**	**Week 3**	**1 lecture**
Topic 3	**Intravenous Infusion**	**Week 4**	**2 lectures**
Topic 4	**Pharmacokinetics of oral absorption**	**Week 5/6/7**	**5 lectures**
Topic 5	**multiple dosage regimen**	**Week 7/8**	**2 lectures**
Topic 6	**dosage regimen schedule**	**Week 8/9**	**3 lectures**
Topic 7	**Two compartment open model (IV bolus)**	**Week 10/11**	**3 lectures**
Topic 8	**Pharmacodynamics and Pharmacokinetics**	**Week 11/12**	**2 lectures**
Review		**Week 13**	
University Final Exams		**Week 14**	