



Course Specification

(Bachelor)

Course Title:	Basic Pharmacokinetics
Course Code:	PHCP 453
Program:	Pharmaceutical Sciences
Department:	Clinical Pharmacy
College:	College of Pharmacy
Institution:	Najran University
Version:	3
Last Revision Date:	25/7/2024



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

(2+1)

2. Course type

A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input type="checkbox"/> Department	<input type="checkbox"/> Track	<input checked="" type="checkbox"/> Others (Program)
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective		

3. Level/year at which this course is offered: (Level 7th / Year 4)

4. Course general Description:

This course will prepare students to understand the concept of pharmacokinetics. It demonstrates how the body handles the medicine and xenobiotic including the major four part of pharmacokinetics: absorption, distribution, metabolism, and excretion. This course will help students to understand the concept of proper dosing of medicines, especially in special population as well as the possible interaction between drugs and food supplements.

5. Pre-requirements for this course (if any):

None

6. Co-requisites for this course (if any):

None

7. Course Main Objective(s):

- Define pharmacokinetics and its main parameters.
- Represent graphically the typical natural log of plasma drug concentration versus time curve for a one-compartment model after an intravenous dose.
- Describe the concept of the therapeutic concentration range.
- List the assumptions made about drug distribution patterns in both one- and two-compartment models.
- Identify factors that cause interpatient variability in drug disposition, drug metabolism, and drug excretion and relate these factors to drug response.
- Describe situations in which routine clinical pharmacokinetic monitoring would be advantageous.



2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Demonstrate specialized knowledge and understanding in biomedical, pharmaceutical, clinical, social, behavioral, administrative sciences and research methodology in relation to the development and use of medications including natural therapies for prevention and treatment.	K1	Lectures. Group Discussion. Laboratory work.	Written exam. Assignment. Practical exam.
1.2	Demonstrate an in-depth knowledge of the concepts of pharmacy practice settings	K2	Lectures. Group Discussion. Laboratory work.	Written exam. Assignment. Practical exam.





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	including the role of pharmacists according to legal, ethical and professional standards in promoting health prevention and treatment.			
2.0	Skills			
2.1	Integrate pharmaceutical, administrative and clinical sciences with information obtained from different resources to provide accurate recommendations and creative solutions for complex problems.	S1	Lectures. Group Discussion. Laboratory work. Problem based learning.	Written exam. Assignment. Practical exam. Presentation.
2.4	Utilize appropriate information technologies to optimize safe medication use and patient care.	S4	Lectures. Group Discussion. Laboratory work. Problem based learning.	Written exam. Assignment. Practical exam. Presentation.
3.0	Values, autonomy, and responsibility			
3.2	Advocate patient rights to safe and effective medication use in relevant practice setting.	V2	Practice session. Problem based learning. Lecture/Tutorial.	Observation card. Assignment. Practical exam. Presentation.
3.3	Engage in self-learning practices and inter-professional healthcare education activities.	V3	Practice session. Problem based learning. Lecture/Tutorial.	Observation card. Assignment. Presentation.

C. Course Content

No	List of Topics	Contact Hours
Theoretical		
1.	Introduction to basic pharmacokinetics	3
2.	Elimination half life	4
3	IV bolus pharmacokinetics	2
4	Oral pharmacokinetics	2
5	Pharmacokinetics relation (CL, VD, Dose)	2
6	IV infusion PK	2
7	Multiple dosing pharmacokinetics	3
8	Phase I and II metabolisms	2
9	Enzyme kinetics and transporters	2
10	Drug excretion	2



11	Clinical consideration of clearance	2
12	Two compartmental pharmacokinetics	2
13	Protein binding	2
Total		30
No	List of Topics	Contact Hours
Practical		
1	Mathematical concepts review	3
2	Introduction to basic pharmacokinetics	3
3	Elimination half-life	2
4	IV bolus pharmacokinetics	2
5	Oral pharmacokinetics	3
6	IV infusion PK	2
7	Multiple dosing pharmacokinetics	3
8	Phase I and II metabolisms	2
9	Enzyme kinetics and transporters	2
10	Drug excretion	2
11	Clinical consideration of clearance	3
12	Two compartmental pharmacokinetics	3
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	7-8	20%
2.	Quizzes	Continuous assessment	10%
3.	Assignments or Project	2-10	10%
4.	Observation card	9	5%
5.	Presentation	8	5%
6.	Final practical exam	14	10%
7.	Final exam	16-18	40%
8.	Total		100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).



E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ol style="list-style-type: none"> 1. Power points slides (available in blackboard) 2. Applied biopharmaceutics and pharmacokinetics 7th edition by Ducharme and Shargel. <p>Available at accesspharmacy.com</p>
Supportive References	<ol style="list-style-type: none"> 1. Applied Clinical Pharmacokinetics, 3rd edition by Larry A. Bauer. <ul style="list-style-type: none"> • Available at accesspharmacy.com 2. Clinical pharmacokinetics and pharmacokinetics concepts and application 4th edition by Rowland and Tozer.
Electronic Materials	<p>https://login.nu.edu.sa/cas/login?service=http://lib.nu.edu.sa/digitallibrary.aspx</p> <p>AccessPharmacy (https://sdl.edu.sa/SDLPortal/Publishers.aspx)</p> <p>Excel software for pharmacokinetic parameters calculations</p>
Other Learning Materials	<ol style="list-style-type: none"> 3. Power points slides (available in blackboard) 4. Applied biopharmaceutics and pharmacokinetics 7th edition by Ducharme and Shargel. <p>Available at accesspharmacy.com</p>

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ol style="list-style-type: none"> 1. A classroom containing at least 30 seats 2. Computer lab to be teach student proper use of computer software for pharmacokinetics parameters.
Technology equipment (projector, smart board, software)	Computer, proper projectors, internet access.
Other equipment (depending on the nature of the specialty)	Computer lab must include Windows Office software.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Head of the department and students	Direct Questionnaires (indirect)
Effectiveness of students assessment	Peer reviewer students	Indirect Questionnaires (indirect)
Quality of learning resources	Faculty member Student	Indirect Indirect
The extent to which CLOs have been achieved	Faculty member	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	CLINICAL PHARMACY DEPARTMENT COUNCIL
REFERENCE NO.	14460214-1057-00001
DATE	20/8/2024

