Course Description Form

1. Course Name:

Therapeutic Drug Monitoring (Theoretical + Practical)

2. Course Code:

Phclp25 5213

3. Semester / Year:

2nd Semester / 5th year

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Students' signature on attendance sheet

6. Number of Credit Hours (Total) / Number of Units (Total)

2 hours theoretical + 2 hours practical per week / 3 units

7. Course administrator's name (mention all, if more than one name)

Theoretical

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Practical

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8. Course Objectives

To study the basic principle of drug kinetics.
To study the applications of clinical pharmacokinetics equations and calculations
To study the clinical pharmacokinetics/ pharmacodynamics principle of antibiotics, cardiovascular agents and other drugs.

9. Teaching and Learning Strategies

Explain basic principles of pharmacokinetics.
Understand equation and clinical drug doses calculation.
Apply equation in drug doses calculation.
Analyze drug doses activity.
Evaluate dose activity through patient response.
Design treatment plan to the patient according to his medical condition.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2+2	A1: Explains core clinical PK/PD concepts and their relevance to therapeutic dru monitoring.	Review of clinical pharmacokinetic (PK)/ pharmacodynamic (PD) Principles. (part 1)	Lecture with video	discussion
2	2+2	A3: Describes concentratio time profiles and key PK/P relationships used in dosing decisions.	Review of clinical pharmacokinetic (PK)/ pharmacodynamic (PD) principles (part 2)	Lecture	quiz

3	2+2	B1: Analyzes clinical pharmacokinetic equations interpret patient data and estimate dosing parameters	Clinical PK equations and calculations for some medications	Lecture	discussion
4	2+2	A2: Identifies major pharmacokinetic parameter (half-life, volume of distribution, clearance) and key determinants.	Pharmacokinetic paramete (half life and volume of distribution……)	Lecture	Discussion+ problem solving
5	2+2	A3: Describes bioavailabili and factors affecting drug absorption and systemic exposure.	Bioavailability	Lecture+ vi	Paper-based exam
6	2+2	B2: Compares IV bolus and IV infusion dosing using PK/PD principles and monitoring requirements.	Clinical PK/PD for IV routes	Lecture	Discussion + problem solving
7	2+2	C1: Applies clinical pharmacokinetic equations and calculations to individualize doses based o measured drug levels.	Clinical PK equations and calculations	Lecture	Paper-based exam(practic
8	2+2	B3: Evaluates dosing and monitoring considerations i special populations (e.g., renal/hepatic impairment, pediatrics, geriatrics).	Clinical PK/PD for specia populations part 1	Lecture	discussion
9	2+2	B1: Analyzes patient-speci factors in special populatio to justify monitoring plans and dose modification.	Clinical PK/PD for specia populations part 2	Lecture	Paper-based exam
10	2+2	A1: Explains therapeutic d monitoring for aminoglycosides, including target concentrations and safety monitoring.	Clinical PK equations and calculation for aminoglycoside part1	Lecture	discussion
11	2+2	C1: Applies aminoglycosid pharmacokinetic calculatio to design and adjust individualized dosing regimens.	Clinical PK equations and calculation for aminoglycoside part2	Lecture	Discussion +problem solving
12	2+2	B3: Evaluates vancomycin dosing and monitoring strategies (e.g., AUC-based monitoring) for efficacy an nephrotoxicity risk.	Clinical PK equations and calculation for vancomyci	Lecture	Discussion +problem solving
13	2+2	A2: Identifies key indicatic therapeutic ranges, toxicity features, and major interactions relevant to digoxin monitoring.	Clinical PK equations and calculation for digoxin	Lecture	discussion
14	2+2	B1: Analyzes theophylline pharmacokinetics and interacting factors to guide	Clinical PK equations and calculation for theophyllir	Lecture	discussion

		monitoring and dose adjustment.			
15	2+2	B1: Analyzes phenytoin nonlinear kinetics and serum level interpretation to determine an appropriate dose adjustment.	Clinical PK equations and calculation for phenytoin	Lecture	Paper-based exam

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc
● 25 M (midterm written exam) ● 15 M (written exams of practical part+ attendance) ● 60 M (final exam) ● 100 M total

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Applied Clinical Pharmacokinetics, Second Edition, 2008 by Larry A. Bauer.
Recommended books and references (scientific journals, reports...)	Clinical Pharmacokinetics Concepts and Applications Third Edition, 1995 by Malcolm Rowland and Thom Tozer;
Electronic References, Websites	