

Reviewing the performance of the higher education institution ((academic program review))

Course Description

This course description provides a summary of the most important course characteristics and the learning outcomes expected of the student to achieve, demonstrating whether the student has made the most of the learning opportunities available, and is linked and consistent with the academic program description.

1. Educational Institution	Al Zahrawi University Ministry of Higher Education and Scientific Research
2. University Department / Center	Collage of Pharmacy
3. Course Name / Code	Therapeutic drug monitoring - Fifth Stage PCPC 58
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	2025-2026
7. Total Number of Study Hours	30 hours
8. Date of preparing this description	2025-2026
9. Course Objectives: the course aims to enable students to: 1. Explain the principles, clinical importance, and applications of therapeutic drug monitoring (TDM). 2. Describe the pharmacokinetic principles related to TDM, including clearance, volume of distribution, half-life, loading dose, maintenance dose, and dosing interval. 3. Explain therapeutic and toxic drug concentrations, peak and trough concentrations, and appropriate sampling times. 4. Evaluate the effects of renal and hepatic impairment, patient-specific factors, special populations, and drug interactions on drug concentrations and dosing.	

5. Interpret TDM results and apply appropriate principles for individualized dose adjustment of commonly monitored drugs.

10- Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

At the end of this theoretical course, the student will be able to:

1. Identify drugs that require therapeutic drug monitoring and explain the rationale for their monitoring.
2. Apply pharmacokinetic concepts to predict changes in drug concentrations and therapeutic response.
3. Determine the appropriate timing of blood sampling and distinguish between peak and trough concentrations.
4. Analyze patient-specific factors, including renal and hepatic function, that affect drug concentrations and dosing.
5. Interpret TDM results and select appropriate dose-adjustment strategies for commonly monitored drugs.

B. Subject-Specific Skills

1. Gain skill in communicating with patients.
2. Acquire the skill in communicating with medical staff
3. Acquiring skill in calculating drug doses
4. Acquire the skill in assessing the disease state and the appropriate treatment

Teaching and Learning Methods

- Lectures.
- Interactive presentations.
- Case-based discussions.
- Problem-solving.
- Group discussions.
- Student presentations.
- Clinical examples and case studies.

C. Evaluation Methods

1. Midterm and final examinations / exam grades.
2. Class participation and discussion.
3. Homework and assignments.
4. Student presentations.

D. Thinking Skills

- Applying pharmacokinetic principles to clinical TDM situations.
- Analyzing patient-specific clinical and laboratory data.
- Interpreting therapeutic drug concentration results.
- Identifying factors responsible for inappropriate drug concentrations.
- Selecting appropriate dose-adjustment principles.
- Developing clinical problem-solving and decision-making skills.
- Integrating pharmacokinetic and clinical information in patient care.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Theoretical Knowledge	Introduction to Therapeutic Drug Monitoring	Lecture discussion	Daily exam, oral questions, discussion and homework
2	2	Theoretical Knowledge	Basic Pharmacokinetic Principles in TDM	Lecture discussion	Daily exam, oral questions, discussion and homework
3	2	Theoretical Knowledge	Therapeutic Range, Toxicity and Drug Concentration–Effect Relationship	Lecture discussion	Daily exam, oral questions, discussion and homework
4	2	Theoretical Knowledge	Loading Dose, Maintenance Dose and Dosing Interval	Lecture discussion	Daily exam, oral questions, discussion and homework
5	2	Theoretical Knowledge	steady State, Half-Life, Clearance and Volume of Distribution	Lecture discussion	Daily exam, oral questions, discussion and homework
6	2	Theoretical Knowledge	Drug Sampling and Interpretation of Peak and Trough Concentrations	Lecture discussion	Daily exam, oral questions, discussion and homework
7	2	Theoretical Knowledge	TDM in Renal Disease and Renal Impairment	Lecture discussion	Daily exam, oral questions, discussion and homework
8	2	Theoretical Knowledge	TDM in Hepatic Disease and Heart Failure	Lecture discussion	Daily exam, oral questions, discussion and homework

9	2	Theoretical Knowledge	TDM in Obesity, Pediatrics and Other Special Population	Lecture discussion	Daily exam, oral questions, discussion and homework
10	2	Theoretical Knowledge	Drug Interactions and Their Effects on TDM	Lecture discussion	Daily exam, oral questions, discussion and homework
11	2	Theoretical Knowledge	TDM for Aminoglycosides – Part 1	Lecture discussion	Daily exam, oral questions, discussion and homework
12	2	Theoretical Knowledge	TDM for Aminoglycosides – Part 2	Lecture discussion	Daily exam, oral questions, discussion and homework
13	2	Theoretical Knowledge	TDM for Vancomycin Part 1	Lecture discussion	Daily exam, oral questions, discussion and homework
14	2	Theoretical Knowledge	TDM for Vancomycin Part 2	Lecture discussion	Daily exam, oral questions, discussion and homework
15	2	Theoretical Knowledge	TDM for Cyclosporin	Lecture discussion	Daily exam, oral questions, discussion and homework

11. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	Admission according to the approved capacity plan
Maximum Number of Students	Admission according to the approved capacity plan

12. Infrastructure	
Required Readings:	1) References: Bauer LA (Ed.), Applied Clinical Pharmacokinetics. McGraw Hill, New York, 2014 2) Winter's Basic Clinical Pharmacokinetics, 7th Edition. Paul Beringer, 2024
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, professional training, and educational activities related to therapeutic drug monitoring and clinical pharmacokinetics.

Name of the Instructor: Ali Hassan Zaki

