

Al Zahrawi University-College of Pharmacy-Department of Pharmaceutics
Course Description for **Biopharmacy _ Labs**

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Biopharmacy Labs (Practical)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester, Fourth Stage (2025-2026)
7. Total Number of Study Hours	30 hours total_ 2 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives: 1. Understanding Drug' Behavior in the body: Through studying the behavior of various drugs on inside the body, students learn about dose impacts, absorption rates, and duration of drug action. 2. Developing Practical Skills: Students will learn to conduct practical experiments on laboratory instruments and software-based data analysis to enhance their scientific research and practical application skills. 3. Calculation of Pharmacokinetics parameters: The objective is to find mathematical equations that describe drugs behavior inside the body using different routes of administration.	
10. Learning Outcomes and Methods of Teaching	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- A.1: Conduct laboratory experiments proficiently, adhering to ethical guidelines.
- A.2: Determine drugs kinetics due to different elimination route.
- A.3: Learn software skills to obtain different mathematical equations that describe drug kinetics.
- A.4: Analyze experimental data and write scientific reports.

B. Subject-Specific Skills

- B.1: Handling lab instruments correctly and safely.
- B.2: Handling data and interpret different graphs and equations.
- B.3: Utilizing scientific methods to analyze experimental data and interpret results.
- B.4: Understanding interpolation and extrapolation of data.

Teaching and Learning Methods

- 1. Discussion and dialogue method.
- 2. Teamwork.
- 3. Quizzes and exams.

C. Evaluation Methods

- 1. Individual's work is evaluated by the instructors over several lab sessions.
- 2. Written tests.
- 3. Software-based tests.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study.
- D2. Encourage students to find solutions to those problems.
- D3. Conduct experiments individually and collectively.
- D4. Data analysis and interpretation.

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills related to computer-based data analysis.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Introduction to Biopharmaceutics	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
2	2	Knowledge	Introduction to M. Excel for PK applications	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
3	2	Knowledge	Zero-Order Kinetics	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
4	2	Knowledge	First-Order Kinetics	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
5	2	Knowledge	Area Under the Curve	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
6	2	Knowledge	Drug Clearance	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
7	2	Knowledge	IV Bolus Kinetics	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
8	2	Knowledge	Calculation of Pharmacokinetics Parameters by the Residual Method	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
9	2	Knowledge	Oral Absorption Kinetics	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
10	2	Knowledge	UV-Vis Spectrophotometry	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions

11	2	Knowledge	Bioavailability Calculations	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
12	2	Knowledge	Volume of Distribution Calculations	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
13	2	Knowledge	Methods for Constructing Standard Curves	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
14	2	Knowledge	Multiple IV Doses	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions
15	2	Knowledge	Dissolution of Oral Tablets	Laptops, Blackboard and Screen Presentations	Daily exam and oral and computer-based questions

12. Infrastructure	
Required Readings:	References: Lab. Manual practical Biopharmacy adopted by the department
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Ammar Sahib Abdulameer