

**Higher Education Institution Performance Review
((Academic Program Review))**

وصف المقرر

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description

1. Educational Institution	Al Zahrawi University College Ministry of Higher Education and Scientific Research
2. University Department / Center	Pharmacy Department / Pharmaceuticals Branch
3. Course Name / Code	Pharmaceutical Calculations / PPCT12
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Teaching system - courses - first stage - .second semester - one course
7. Total Number of Study Hours	2 hours per week / total (30) hours
8. Date of preparing this description	2024-2025
9. Course Objectives:	
1- Enabling students to learn about pharmaceutical calculations 2- Enabling students to develop pharmaceutical knowledge and skills through the use of many tools, glassware and devices that facilitate the process of compounding and preparing medical .prescriptions and pharmaceutical preparations	
10- Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Enable students to recognize and examine the types of numbers and abbreviations commonly used in medical prescriptions.
- 2- Enable students to understand the components of a typical prescription, the different unit system and the relationship between them.
- 3- Enable students to acquire and understand weight and volume measuring tools.
- 4- Enable students to recognize how to calculate drug doses on different bases.
- 5- Enable students to acquire and understand how to reduce and enlarge medical prescriptions.

B. Subject-Specific Skills

- 1- Enabling students to possess pharmaceutical accounting capabilities
- 2- Enabling students to acquire scientific report writing skills
- 3- Enabling students to possess laboratory work skills and conduct scientific experiments.
- 4- Enabling students to read and interpret all medical and pharmaceutical terms and symbols

Teaching and Learning Methods

1. Using the smart board
2. Scientific tests used in laboratories
3. Writing scientific reports related to practical experiments

C. Evaluation Methods

- 1- Midterm and final exams
- 2- Short exams
- 3- Discussions in small groups

D. Thinking Skills

1. Student-teacher dialogue method.
2. Preparing weekly reports.
3. Conducting discussions of the results.
4. Exploratory thinking.

Teaching and Learning Methods

1. Chang at Lestrangle
2. Seminars at Hamork
3. Tests
4. Field Festival
5. Educational Posters

Evaluation Methods

Grades, research and reports, tests.

e. General and Transferable Skills

- 1. The student should be able to employ the knowledge he has received.**
- 2. The student should be able to master the profession of pharmacy.**
- 3. The student should be able to embody what he has acquired in professional development.**

11. Course Structure

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Perform calculations for pharmaceutical dilution	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
2	2	Perform calculations for increasing the concentration of pharmaceutical .preparations	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
3	2	Performing calculations for the preparation and use of concentrated standard solutions	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
4	2	Distinguish between different terms for balanced solutions.	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
5	2	Application of physical and chemical fundamentals in calculations of balanced solutions	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
6	2	Application of special calculations for preparing balanced solutions	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment

7	2	Milli-Equivalent Calculation for Different Pharmaceutical Formulas	Milligram, milliequivalent, millimole and .milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
8	2	Convert between milligrams and milliequivalents	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
9	2	Accounts for milli-equivalent issues	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
10	2	Calculations for millimoles and milliosmoles.	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
11	2	Applications for mixing different concentrations of pharmaceutical forms	Change product concentrations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
12	2	Performing calculations for intravenous solutions for adults and children	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
13	2	Performing calculations for additives to intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical	Daily exam. Practical results assessment

				problems.	
14	2	Performing calculations for the flow rate of intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
15	2	Application of flow rate tables for intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment

12. Infrastructure	
Required Readings:	References: 1 – Ansel, “pharmaceutical calculation” Wolters Kluwer. 2010 2 - Aulton’s pharmaceuticals: The design and manufacture of medicines, 3ed Michael E. Aulton (author) Churchill, Livingstone-Elsever
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:

Dr. Azher A. Ibrahim

PhD. Clinical Chemistry