

Course description: Pharmaceutical Technology I - Theoretical / First Course / Third year
Performance review of higher education institution (assessment of the academic program)

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	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy/ Pharmaceuticals Branch
3. Course Name / Code	Pharmaceutical Technology I / PPCT 35
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	First course / 2025-2026
7. Total Number of Study Hours	3 hours weekly
8. Date of preparing this description	2025-2026
9. Course Objectives:	
The student is studying the fundamentals of pharmaceutical preformulation, including solubility, partitioning, powder, and compaction properties. Also learns the basic principles of preparing various liquid pharmaceutical forms such as solutions, suspensions as well as aerosols, foams and parenteral dosage forms.	

1. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

1. Enabling students to gain comprehensive knowledge of pharmaceutical preformulation including solubility, partitioning, powder, and compaction properties.
2. Enabling students to learn the principles and techniques involved in preparing and developing solutions, suspensions as well as aerosols, foams and parenteral dosage forms.

B. Subject-Specific Skills

1. Enabling students to acquire the basic principles of preparing the pharmaceutical liquid, aerolized and parenteral dosage forms.
2. Enabling students to acquire the skills of storing medicines after completing their preparation.
3. Acquiring the skill of basic principles of pharmaceutical preformulation.
4. Develop an understanding of storage, packaging, and labeling practices across all listed dosage forms to ensure quality and patient safety.

Teaching and Learning Methods

1. Using the smart board.
2. Teaching and giving theoretical lectures
3. Educational seminars and posters

C. Evaluation Methods

1. Midterm and final exams
2. Oral and written exams
3. Classroom activities and posters

D. Thinking Skills

1. Thinking skills through translation, analysis, evaluation and extraction of ideas.
2. Extracting the correct methods for preparing liquid and aerolized preparations.
3. Extracting the correct methods for preformulation of different pharmaceutical forms.

e. General and Transferable Skills

1. Acquire skill in using the computer
2. Give confidence to the student through presenting scientific research
3. Give confidence to the student through discussing reports
4. Acquire skill in dealing
5. Acquire skill in leadership

10. Course Structure					
Evaluation Method	Learning Methods	Unit Name / Course or Topic	Required Learning Outcomes	Hours	Week
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	The concept of preformulation, Solubility, Molecular dissociation	۳	۱
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	Partitioning, Dissolution rate, Hygroscopicity	۳	۲
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	Physical form, Powder properties, Compaction properties	۳	۳
Monthly and daily examinations and discussion	Using the smart board	Solutions	Some Solvents for Liquid Preparations, Preparation of solutions, Mixing oral liquids, Oral solutions and preparations for oral solution	۳	۴
Monthly and daily examinations and discussion	Using the smart board	Solutions	Syrups, Elixirs, Tinctures, Proper administration and use of liquid peroral dosage forms, Topical Solutions and Tinctures	۳	۵
Monthly and daily examinations and discussion	Using the smart board	Solutions	Vaginal and rectal solutions, Topical tinctures, Topical oral (dental) solutions, Miscellaneous solutions, Nonaqueous solutions, Extraction methods for preparing solutions	۳	۶
Monthly and daily examinations and discussion	Using the smart board	Suspensions	Reasons for suspension, Features of desired in a pharmaceutical suspension, Sedimentation rate of the particles of a suspension	۳	۷
Monthly and daily examinations and discussion	Using the smart board	Suspensions	Physical features of the dispersed phase, Dispersion medium, Rheology of suspensions, Preparation of suspensions	۳	۸

Monthly and daily examinations and discussion	Using the smart board	Suspensions	Sustained-release suspensions, Extemporaneous compounding of suspensions, Mixing solids in liquids, Packaging and storage of suspensions, Examples of pharmaceutical suspensions, Dry powders for oral suspension	۳	۹
Monthly and daily examinations and discussion	Using the smart board	Aerosols and foams	Types of aerosols, Advantages of the aerosol dosage form, the aerosol principle, Aerosol systems, Aerosol container and valve assembly, Metered-dose inhalers, Filling operations	۳	۱۰
Monthly and daily examinations and discussion	Using the smart board	Aerosols and foams	Packaging, labeling, and storage, Proper administration and use of pharmaceutical aerosols, Examples of aerosols, Topical aerosols, Vaginal and rectal aerosols, Foams: Their types and preparation	۳	۱۱
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Injections, Parenteral routes of administration, Official types of injections, Solvents and vehicles for injections	3	۱۲
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Colligative properties for injections, Methods of sterilization, Validation/verification of sterility.	3	13
Monthly and daily examinations and discussion	Using the smart board	Parenterals	The industrial preparation of parenteral products, Packaging, labeling, and storage of injections, Available injections (examples)	۳	14
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Small volume parenterals, large volume parenterals, Special considerations associated with parenteral therapy, Irrigation and dialysis solutions	۳	15

11. Learning and teaching resources	
Required books	• Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022. • Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017.
Main References (Sources)	• American Pharmacy.
Websites	• https://pensatechpharma.com/areas-of-expertise/preformulation/ • https://www.pharmaexcipients.com/excipients-for-parenterals/

Name of the Instructor: Dr. Firas Ghafil Abbas