Course Description Form

1. Course Name:

Physical pharmacy II (Theoretical+ Practical)

2. Course Code:

Phind23 2210--

3. Semester / Year:

2nd Semester/2nd year

4. Description Preparation Date:

15/1/2024

5. Available Attendance Forms:

Students' signature on attendance sheet

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

3 hours Theoretical + 2 hours Practical (75) /4 units

7. Course administrator's name

Theoretical

Name: Lec. Dr. Ali Alazzo
Email: alialazzo@uomosul.edu.iq

Practical

Name: Lec. Amina Mudhafar Al-Nima
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Name : Assis. Lec. Rasha Khalid Shakir
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8. Course Objectives

Course Objectiv	• Learning the physical principles that guide the pharmaceutical dosage form. • Understanding the basis of solubility, kinetics and drug delivery.

9. Teaching and Learning Strategies

Strategy	Lecturing Seminars Homework Practical laboratory demonstrations and team lab work

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3+2	Define saturated solution, solubility, and unsaturated solution. Describe and give examples of polar, nonpolar, and semipolar solvents.	Solubility and distribution phenomena, solvent-solute interactions, solubility of gases in liquids,	Theoretical lectures. Laboratory experiments	Paper-based exam
2	3+2	Define complete and partial miscibility. Understand the factors controlling the solubility of weak electrolytes.	Solubility of liquids liquids, solubility non-ionic solids liquids,	Theoretical lectures. Laboratory experiments	Paper-based exam

3	3+2	Describe what a distribution coefficient and partition coefficient are and their importance in pharmaceutical systems.	distribution of solu between immisci solvents.	Theoretical lectures. Laboratory experiments	Paper-based exam
4	3+2	Define reaction rate, reaction order, and molecularity. Understand and apply apparent zero-order kinetics to the practice of pharmacy. Calculate half-life and shelf life of pharmaceutical products and drugs.	Chemical kinetics a stability, rate and ord of reactions,	Theoretical lectures. Laboratory experiments	Paper-based exam
5	3+2	Describe the influence of temperature, ionic strength, solvent, pH, and dielectric constant on reaction rates.	Influence temperature and ot factors on reactions r	Theoretical lectures. Laboratory experiments.	Paper-based exam
6	3+2	Calculate the increase in rate constant as a function of temperature. Describe the factors that influence solid-state chemical kinetics.	Decomposition of medicinal agents and accelerated stability analysis.	Theoretical lectures. Laboratory experiments	Paper-based exam
7	3+2	Differentiate among different types of interfaces and describe relevant examples in the pharmaceutical sciences. Understand the terms surface tension and interfacial tension	Interfacial phenomer	Theoretical lectures. Laboratory experiments	Paper-based exam

		and their application in pharmaceutical sciences.			
8	**Mid-term exam**				
9	3+2	Calculate surface and interface tensions, surface free energy, its changes, work of cohesion and adhesion, and spreading coefficient for different types of interfaces.	Electric properties o interfaces, spreading coefficient	Theoretical lectures. Laboratory experiments.	Paper-based exam
10	3+2	Understand the mechanisms of adsorption on liquid and solid interfaces. Classify surface-active agents and appreciate their applications in pharmacy.	Adsorption at liquid interfaces, surface-active agents	Theoretical lectures. Laboratory experiments	Paper-based exam
11	3+2	Differentiate between different types of colloidal systems and their main characteristics.	Colloids, dispersed system and its pharmaceutical application, types of colloidal systems	Theoretical lectures. Laboratory experiments	Paper-based exam
12	3+2	Appreciate the major kinetic properties of colloids. Understand the main electrical properties of colloids and their application for the stability, sensitization, and protective action of colloids.	kinetic properties, diffusion, zeta potential, solubilizat of colloidal systems	Theoretical lectures. Laboratory experiments	Paper-based exam
13	3+2	Define rheology, provide examples of fluid pharmaceutical	Rheology, Newtonia and non-newtonian systems,	Theoretical lectures.	Paper-based exam

		products exhibiting various rheologic behaviors, and describe the application of rheology in the pharmaceutical sciences and practice of pharmacy. Differentiate flow properties and corresponding rheograms between Newtonian and non-Newtonian materials.		Laboratory experiments	
14	3+2	Understand and calculate the effects of temperature on viscosity and recognize similarities between viscous flow and diffusion relative to temperature. Recognize and identify specific rheologic behaviors with their corresponding rheograms. .	Thixotropy, determination of thixotropy.	Theoretical lectures. Laboratory experiments	Paper-based exam
15	**Students' seminars**				

11. Course Evaluation

- 20 M Theoretical assessment;
  (paper-based mid-term exam + quiz + attendance + seminar)
- 20 M practical assessment (attendance + quiz + practice)
- 60 M paper-based theoretical final exam

100 M total

12. Learning and Teaching Resources

Required textbooks	1- Alfred Martin et al, Physical Pharmacy,6th edition,2010. 2- Laboratory Manual for Practical Physical pharmacy adopted by the department.
Main references (sources)	1- Physicochemical Principles of Pharmacy by Alexan Taylor Florence and David Attwood.

	2- Fast track: Physical Pharmacy by Alexander Tay Florence and David Attwood.