



Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR351 Pharmaceutics (1)

Summer Semester 2021-2022

Course Catalog

3 Credit Hours. This course integrates the principles of physical pharmacy, traditional and modern pharmaceutical dosage forms. Covered topics are oral solutions, otic, nasal, ophthalmic preparations, and sterile pharmaceutical dosage forms. This course introduces students to the basics of physical pharmacy such as ideal and nonideal solutions, non-ideality corrections, colligative properties, concentration expressions, solubility, ionic equilibria, buffers, and isotonicity. The rest of the course deals with pharmaceutical solutions based on their: a. composition such as syrups, elixirs, spirits, and aromatic waters. b. use such oral, otic, nasal, ophthalmic, topical, and parenterals. c. method of preparation such as fluid extracts and injections.

Text Book

Title	Martin's Physical Pharmacy and Pharmaceutical Sciences
Author(s)	Patrick J. Sinko
Edition	6th Edition
Short Name	Reff#1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Reff#2	Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems	Lloyd V. Allen, Jr., Nicolas G. Popovich & Howard C. Ansel	10th Edition	

Instructor

Name	Prof. Khouloud Alkhamis
Office Location	P1L-2
Office Hours	Sun : 09:30 - 10:00 Sun : 13:00 - 14:00 Mon : 09:30 - 10:00 Mon : 13:00 - 14:00 Tue : 09:30 - 10:00 Tue : 13:00 - 14:00 Wed : 09:30 - 10:00 Wed : 13:00 - 14:00
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Instructor

Name	Prof. Shereen Assaf
Office Location	P2 L1
Office Hours	Sun : 13:00 - 15:00 Mon : 13:00 - 15:00 Tue : 13:00 - 14:30 Thu : 11:30 - 12:00
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Class Schedule & Room

<p>Section 1: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: P1101</p> <p>Section 2: Lecture Time: Sun, Mon, Tue, Wed : 11:30 - 13:00 Room: P1101</p>

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Solutions of non-electrolytes: concentration expressions, ideal and real solutions, Henry's law, colligative properties	From Ref#1
Week 2	Solutions of electrolytes: Theory of strong electrolytes	From Ref#1
Weeks 2, 3	Ionic equilibria: pH of solutions, the modern theory of acids, bases and salts, acid base equilibrium, Sorensen's pH scale, calculation of pH	From Ref#1
Week 4	Buffered: The buffer equation, buffer capacity, buffers in pharmaceutical and biologic systems	From Ref#1
Week 4	Isotonic solutions: Measurement of tonicity, calculating tonicity using Liso values, methods of adjusting tonicity	From Ref#1
Week 5	Solubility and distribution phenomena. General principles. Solvent-solute interaction. Solubility of gases in liquids. Solubility of liquids in liquids. Solubility of solids in liquids. Distribution of solutes between miscible solvents.	From Ref#1
Week 6	pharmaceutical solutions: Introduction, solvents and vehicles, preparation of solutions, formulation considerations, oral solutions, syrups, elixirs, tinctures	From Ref#2
Week 6	Other types of solution preparations. Nasal solutions, otic solutions, topical solutions, vaginal and rectal solutions	From Ref#2
Week 7	Ophthalmic preparations: Pharmaceutical requirements, packaging ophthalmics, proper administration, contact lens and care and use solutions.	From Ref#2
Week 7	Parenteral preparations: Parenteral routes, types of injections, solvents and vehicles, non-aqueous vehicles, additives, methods of sterilization, small volume parenterals, large volume parenterals, special considerations & other injectable products	From Ref#2

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Determine the concentration of a solution in various units or expressions. [1PLO1.1]	7%	First Exam
Differentiate between ideal and nonideal solutions. [1PLO1.1]	6%	First Exam
Describe the relationship between solute concentration and colligative properties and be able to determine molar mass based on this relationship. [1PLO1.1]	6%	First Exam
Describe the relationship between concentration and activity. [1PLO1.1]	7%	First Exam
Predict solution pH and prepare a buffer with a certain capacity. [1PLO1.1]	24%	Second Exam
Differentiate between hypertonic, hypotonic, and isotonic solutions and be able to adjust tonicity. [1PLO1.1]	5%	Second Exam
Define solubility and solute-solvent interactions [1PLO1.1]	7%	
Calculate the solubility of a gas in a liquid, liquid in a liquid, and solid in a liquid. [1PLO1.1]	7%	
Describe the effects of temperature, pressure, salts, chemical reactions, pH, and cosolvents on solubility. [1PLO1.1]	2%	
Compose and assess phase diagrams. [1PLO1.1]	2%	
Calculate partition coefficient and differentiate between apparent and true value. [1PLO1.1]	2%	
Discuss the advantages and limitations of drug delivery systems in the form of solutions. [1PLO5.1]	3%	
Identify and categorize pharmaceutical liquid dosage forms available in the market. [1PLO5.1]	10%	
Solve problems encountered during the formulation of liquid dosage forms. [1PLO5.1]	12%	

Relationship to Program Student Outcomes (Out of 100%)															
PLO1.1	PLO2.1	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.2	PLO3.3	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1
75															25

Evaluation	
Assessment Tool	Weight
First Exam	25%
Second Exam	25%
Final Exam	50%

Policy	
Exams	All exams are closed book and notes. The final exam is comprehensive (covers all the material). Incomplete exams need approval from the dean of the faculty.
Cheating	Prohibited; and in case of cheating, the student will be subject to punishment according to the Standard JUST policy المادة 7: إذا ضبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة أ- اعتباره راسباً في ذلك الامتحان أو الاختبار ب- إلغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل ج- فصله من الجامعة لمدة فصل دراسي واحد، و هو الفصل التالي للفصل الذي ضبط فيه
Attendance	According to JUST policy: The faculty member to assign ZERO grade (35) if a student misses 10% of the classes that are not excused. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Participation	Good participation is expected
courses withdrawal	Last day of courses withdrawal (without reimbursement of tuition fees) as announced in the academic calender.

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