

COURSE DESCRIPTIONS

Faculty	Pharmacy				
Department	Pharmacy			NQF level	
Course Title	Physical Pharmacy Laboratory	Code	PHC 212	Prerequisite	PHC 211
Credit Hours	1	Theory	-	Practical	1
Course Leader	Assoc.Professor. Dr. Ahmed Rifaat	email	Ahmed.ga@jadara.edu.jo		
Lecturers	Assoc.Professor. Dr. Ahmed Rifaat	emails	Ahmed.ga@jadara.edu.jo		
Lecture time		Classroom			
Semester		Production		Updated	
Awards				Attendance	Fulltime

Short Description

The aim of this course is to provide the student with basic knowledge and understanding of the phase rule and its applications to different systems containing multiple components, understanding the properties of electrolytes and nonelectrolyte solutions and explaining the different types of interfaces, the term surface tension and interfacial tension and the mechanism of adsorption at interfaces, classifying the surface active agents and appreciating their application in pharmacy. to provide the student with basic knowledge and understanding of the rate of chemical reactions, types and order of chemical reactions. Calculations of half-life times and methods of determining the order of chemical reaction of drug solutions and in suspension solutions.

Course Objectives

- To explain the properties of drugs in liquid forms and the properties of drug compounds as organic, ionic and to apply the proper laws in order to describe their physical properties.
- To explain the properties of ionic drug solutions, in terms of their activity, activity coefficient and ionic strength. Applying the theories of strong electrolyte and weak electrolytes.
- To explain the stability of drug solution in buffering systems, and to show the effect of buffering systems on stability of drugs,
- To explain the isotonicity of drug solutions and the methods of preparing isotonic drug solutions, and methods of adjusting tonicity of drug solutions.
- To study some physical phenomena, such as solubility of liquids, solids drugs in aqueous and mixed solvents and the rules to control such solubility.
- To determine the shelf-life and Expiry date of drugs under degradation processes.
- To study the effect of concentration, temperature and catalyst on the rate of degradation of drugs in solution.
- To explain the types of orders of reactions, and the methods used in determination of order of drug degradation.
- To study Drug stability and the reactions of breakdown of drug compounds in solid forms and in liquid forms

Learning Outcomes	
A. Knowledge - Theoretical Understanding	
A1. Describe the factors that affect the solubility of drug compound in aqueous or mixed solvent and the basic concepts kinetics of chemical reactions in drug solutions.	
B. Knowledge - Practical Application	
A2. To study the solubility of drugs in aqueous and in mixed solvents. A3. To study the method of how to prepare buffered drug solutions and how to prepare an isotonic drug solutions.	
C. Skills - Generic Problem Solving and Analytical Skills	
b1. Describe scientific procedures for solving problems in identifying preparing of drugs through analyzing course example and answer questions through the lecture. B2. Describe scientific procedures for solving problems in measurements of stability of drugs through measurements of shelf-life and expiry date through examples and answer questions	
D. Skills - Communication, ICT, and Numeracy	
E. Competence: Autonomy, Responsibility, and Context	
C1. use information technology tools .	
Teaching and Learning Methods	
<ul style="list-style-type: none"> • Lectures. • Research projects and information collection. • discussion during lectures and tutorial • self-learning (presenting scientific proposal) 	
Assessment Methods	
(presentations, research, quizzes) Final exam	

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
.1	3	A1, b1,	Experiment on solubility	Laboratory and presentations	Assignments , Mid and final exams
.2	3	A1, b1	coslvancy	Laboratory and presentations.	Assignments , Mid and final exams
.3	3	A3, b2, c1	Phenol water system	Laboratory and presentations	Assignments , Mid and final exams
.4	3	A2, b2, c1	Triphasic system	Laboratory and presentations	Assignments , Mid and final exams
.5	3	A1, b2	Surface tension and HLB	Laboratory and presentations	Assignments , Mid and final exams
.6	3	A1,c1	adsorption	Laboratory and presentations	Assignments , Mid and final exams
.7	3	A2,B2	Viscosity	Laboratory and presentations	Assignments , Mid and final exams
.8	3	C1,a3	Effect of concentration on viscosity	Laboratory and presentations	Assignments , Mid and final exams
.9	3	A2, b2	Reaction kinetics	Laboratory and presentations	Assignments , Mid and final exams

.10	3	A3, b2	Determination of order	Laboratory and presentations	Assignments , Mid and final exams
.11	3	A1, c1	Order of drug release	Laboratory and presentations	Assignments , Mid and final exams

Infrastructure	
Textbook	a) Textbook of Pharmaceutical Dispensing, Goyal and Amit, 2012. b) Ansel's pharmaceutical dosage forms and drug delivery systems, Allen and Loyd, 2008. c) A. Martin. Physical Pharmacy. Forth edition. Lea & Febiger, Philadelphia, London, 1993.
References	a) M.E. Aulton. Pharmaceutics: The science of dosage form design. Churchill Living Stone, 1996. b) Bentley's textbook of pharmaceutics.
Required reading	
Electronic materials	lectures
Other	

Course Assessment Plan								
Assessment Method	Grade	CLOs						
		A1	A2	A3	B1	B2	C1	
First (Midterm)	20	5	5		5		5	
Second (if applicable)								
Final Exam	50	5	10	10	5	10	10	
Coursework								
Coursework assessment methods	Assignments	10	2	2	2	2		
	Case study							
	Discussion and interaction							
	Group work activities							
	Lab tests and assignments	20			5		5	10
	Presentations							
	Quizzes							
Total	100	12	17	17	12	17	25	

Plagiarism
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>

