



Department	Pharmacy
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Course Name	Pharmaceutics–1	Course No.	201221
Prerequisite	201180	Credit Hours	3
Number & date of course plan approval	2011/2010	Brief Description	See form QF02/0409

(Course Objectives)	<ol style="list-style-type: none"> 1. Students should be able to understand the solubility terms and factors affecting solubility. 2. Students should be able to determine the reaction order and rate in this course. Also they should be able to perform accelerated stability analysis and to calculate the half-life and shelf-life of various drugs formulations. 3. The student should understand the concepts of dissolution and diffusion analysis for the drug formulation. 4. The student should understand the concept of adsorption, spreading, and application of surface-active agents in the pharmaceutical formulation. 5. The student should be able to differentiate between Newtonian and non-Newtonian systems, and the influence of such rheological properties on pharmaceutical formulation.
Course Topics	<ol style="list-style-type: none"> 1. This course provides students with an introduction to the knowledge of physical pharmacy principles. 2. It will introduce the students to all the methods to prepare isotonic solution. This course will provide students with basic knowledge of solubility terms and distribution phenomena. 3. It will provide student with basic knowledge of kinetics, rates and orders of reactions, and accelerated stability studies. 4. It will cover subject of diffusion and dissolution. It will introduce students to interfacial phenomena, adsorption concepts, and applications of surface-active agents. It will introduce the student to colloidal systems. 5. It will introduce rheology and material classification according to rheological properties.
Text Books	<ol style="list-style-type: none"> 1. Alfred Martin, <i>Physical Pharmacy: Physical Chemical Principles in the Pharmaceutical Sciences</i>, sixth edition, Lea & Febiger, 2010.



References	1. Jens T. Carstensen, <i>Advanced Pharmaceutical Solids</i> , Marcel Dekker, 2001. 2. Jens T. Carstensen, C. T. Rhodes, <i>Drug Stability: Principles and Practices</i> , third edition, Marcel Dekker, 2000. 3. A. T. Florence, <i>Physicochemical Principles of Pharmacy</i> , second edition, 1988. 4. E. L. Cussler, <i>Diffusion Mass Transfer in Fluid Systems</i> , Cambridge university press, 2009.			
Grade Determination	1 st Exam=25% 2 nd Exam=25% Final Exam= 50%	(Practical Course Grade Determination)	Course Work =50% (Reports, Term Papers, Quizes) Final Exam = 50%	
Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
01	1 1	-Introduction to physical pharmacy -Interpretive tools -Isotonic solution -Methods for preparation isotonic solutions		
02	1 1 1 1 1	-Solubility principles -Solvent-solute interactions -Solubility of gases in liquids -Solubility of liquids in liquids -Solubility of nonionic solids in liquids -Distribution of solutes between immiscible solvents		
03	1 1 1 1 1	-Introduction to chemical kinetics and orders of the reaction -Rates and orders of reactions -Influence of Temperature and other factors on reaction rates -Kinetics in the solid state -Accelerated stability analysis		
04	1 1 1 1 1	-Definitions of diffusion -Fick's first law, second law -Fick's first law, second law -Procedure and apparatus		
05	1	-Definition of dissolution		



Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy

QF02/0408–1.0

	1	-Dissolution rate		
	1	-Dissolution of tablet, capsules, and granules,		
	1	and powder dissolution		
	1	-Drug release		
06	1	-Liquid interface		
	1	-Spreading		
	1	-Adsorption at liquid interface		
	1	-Adsorption at solid interface		
	1	-Applications of surface active agents		
07	1	-Introduction to colloidal systems		
	1	-Types of colloidal systems		
	1	-Properties of colloids		
	1	-Stability of colloidal systems		
	1	-Solubilization		
08	1	-Introduction to rheology		
	1	-Newtonian systems		
	1	-non-Newtonian systems		
	1	-Thixotropy		
	1	-Negative Thixotropy		
	1	-Determination of rheological properties		
		-Viscoelasticity		

Approved by Dept. Chair		Date of Approval	
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Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	
Office No.	
Extension Email	
Office hours	