

Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy	QF02/0408–2.1E
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Department	Pharmacy
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Course Name	Physical Pharmacy	Course No.	201111
Prerequisite	General Chemistry	Credit Hours	2
Number & date of course plan approval	2016/2017	Brief Description	See form QF02/0409

Course Objective	<p>1-To make student able to carry chemical calculations.</p> <p>2- To enhance their abilities of subjects related to basic knowledge in physical and analytical chemistry</p>		
Intended Learning Outcomes	<p>1- To understand the basic knowledge in gases and their properties</p> <p>2- To understand the types of intermolecular forces, properties of liquids, types of solutions, concentration units, solubility, factors affecting solubility, colligative properties of electrolyte and nonelectrolyte solutions.</p> <p>3- To understand the fundamentals of chemical kinetics and chemical equilibrium.</p> <p>4- To understand the fundamentals of chemical thermodynamics.</p>		
Course Topics	<p>1- Gases</p> <p>2- Intermolecular Forces, Liquids and Solids.</p> <p>3- Properties of solutions.</p> <p>4- Chemical Kinetics.</p> <p>5- Chemical Equilibrium.</p> <p>6- Chemical Thermodynamics.</p>		
Text Books	Chemistry Chemistry , The Central Science , Brown , Le May , Bursten, Prentice Hall , 12 th Edition (2012).		
References	<p>1- Physical Pharmacy, Alfred Martin, Waverly International, 4th edition.1993.</p> <p>2- Chemistry, Chang, McGraw Hill, 9th edition, 2007.</p> <p>3- Chemistry, Zumdahl and Zumdahl, Houghton Mifflin, 7th edition, 2007</p> <p>4- Chemistry, The Molecular Nature of Matter and Change, Silberberg, McGraw Hill, 3ed edition, 2003.</p> <p>5- General chemistry, Ebbing and Gammon, Houghton Mifflin , 9th edition.</p>		
Grade Determination	1 st Exam = 25% 2 nd Exam = 25% Final Exam = 50%	Practical Course Grade	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%

		Determination		
Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
1	1	Characteristic of gas, the gas law	10	
	1	The ideal gas law, gas mixture and partial pressure		
2	1	The kinetic molecular theory	10	
	1	Molecular effusion and diffusion Real gases		
3	1	A molecular comparison of gases liquids and solids,	11	
	1	Intermolecular forces of liquids.		
4	1	Some properties of liquids, vapor pressure.	11	
	1	Phase Changes.		
5	1	Phase diagrams.	11	
	1	Structures of solids, bonding in solid		
6	1	Properties of solutions: The solution process.	13	
	1	Saturated solutions and solubility. First exam		
7	1	Factors affecting solubility.	13	
	1	Ways of expressing concentration.		
8	1	Colligative properties.	13	
	1	Non electrolytes, colloids.		
9	1	Chemical Kinetics: Factors that affect reaction rates. Reaction rates.	14	
	1	The rate Law		
10	1	Concentration and Rate	14	
	1	The Change of Concentration with Time.		
11	1	Temperature and Rate.	14	Notes
	1	Reaction Mechanisms. Catalysis		



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12	1 1	Chemical Equilibrium: The Concept of Equilibrium. The equilibrium constant. Heterogeneous equilibrium Second exam	15	
13	1 1	Calculating equilibrium constant. Applications of equilibrium constant .Le Châtelier's principle	15	
14	1 1	Chemical thermodynamics: Spontaneous processes. Entropy and the Second Law of Thermodynamics.	19	
15	1 1	The molecular interpretation of entropy. Entropy changes in chemical reactions	19	
16	1 1	Gibb's free energy. Free energy and temperature. Free energy and the equilibrium constant. Final exam	19	

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

Course Instructor	Dr. Mohammad Kamal Harb
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Office hours	