



Department	Pharmacy
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Course Name	General Chemistry	Course No.	0120141
Prerequisite	—	Credit Hours	3
Number & date of course plan approval	2016-2017	Brief Description	See form QF02/0409

Course Objectives	<ol style="list-style-type: none"> <li>1- This introductory course is aimed to satisfy specifically the needs of pharmacy and nursing students.</li> <li>2- Students will have the fundamentals of the main fields of chemistry and will be able to go through other courses like Organic, Analytical, Physical and Medicinal Chemistry.</li> <li>3- Students will get the skills of scientific thinking and solving of problems.</li> </ol>
Intended Learning Outcomes	<ol style="list-style-type: none"> <li>1- Students should achieve an understanding of the basic structure of the atom, and how that structure relates to the chemical and physical properties of elements and their compounds.</li> <li>2- Students will learn the basic calculations involved in predicting the amount of reagent needed for a reaction and the amount of product that can be obtained from reaction.</li> <li>3- Students will become familiar with commonly encountered units of measurements.</li> <li>4- Students will become familiar with solutions, in terms of preparation, properties, reactions, and stoichiometric calculations.</li> <li>5- Students will understand the major types of chemical bonding and how that relates to the structure of compounds, polarity and hybridization.</li> <li>6- Students will understand the major types of chemical reactions and the thermal changes that accompany these reactions.</li> </ol>
Course Topics	<ol style="list-style-type: none"> <li>1- Introduction: Matter and Measurement</li> <li>2- Atoms, Molecules, and Ions</li> <li>3- Stoichiometry: Calculations with Chemical Formulas and Equations</li> <li>4- Aqueous Reactions &amp; Solution Stoichiometry.</li> <li>5- Thermochemistry.</li> <li>6- Electronic Structure of Atoms.</li> <li>7- Periodic Properties of the Elements.</li> <li>8- Basic Concepts of Chemical Bonding.</li> <li>9- Molecular Geometry and Bonding Theories.</li> </ol>
Text Books	Chemistry, The Central Science, Brown, Lemay , Bursten and Murphy, Prentice Hall, 12 <sup>th</sup> Edition (2012)



References	1- General chemistry, Ebbing and Gammon, Houghton Mifflin, 9 <sup>th</sup> edition, 2009.			
	2- Chemistry, change, McGraw Hill, 9 <sup>th</sup> edition, 2007.			
	3 -Chemistry, Zumdahl and Zumdahl, Houghton Mifflin, 7 <sup>th</sup> edition, 2007.			
	4- Chemistry, The Molecular Nature of Matter and Change, Silberberg, McGraw Hill, 3ed edition, 2003.			
Grade Determination	1 <sup>st</sup> Exam = 25% 2 <sup>nd</sup> Exam = 25% Final Exam = 50%		Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizzes) Final Exam = 50%
Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
1	1 1 1	- Introduction - The study of chemistry. - Properties of Matter.	Ch# 1	
2	1 1 1	- Units of measurement. - Uncertainty in measurement. - Dimensional analysis	Ch# 1	
3	1 1 1	-The atomic theory of matter. -The discovery of atomic structure. -The modern view of atomic structure.	Ch#2	
4	1 1 1	-The Periodic Table. -Molecules and molecular compounds. -Ions & Ionic compounds.	Ch#2	
5	1 1 1	-Chemical equations and patterns of chemical reactivity. -Atomic and molecular weights and the mole. -Empirical formulas from analyses.	Ch#3	
6	1 1 1	-Quantitative information from balanced equations. -Limiting reactants. - Solution composition and Properties of solutes in aqueous solution. <b>First Exam.</b>	Ch#3  Ch#4	
7	1 1 1	-Acids, bases, salts and ionic equations. -Acids, bases and neutralization reaction. -Oxidation reduction reactions	Ch#4	
8	1 1 1	- Concentration of solutions - Chemical analysis. - Kinetic energy and potential energy and units of energy	Ch#4  Ch# 5	
9	1 1	-Transferring of energy between system and surrounding	Ch# 5	



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

QF02/0408–2.10E

	1	-The first law of thermodynamics and Enthalpy. - Enthalpies of reaction		
10	1	- Calorimetry	Ch#5	
	1	- Hess's law and Enthalpies of formation.	Ch#6	
	1	-The wave nature of light, quantified energy and photons.		
11	1	-Bohr's model of hydrogen atom and the wave behavior of matter.	Ch#6	
	1	-Quantum mechanics and atomic orbitals.		
	1	-Representation of orbitals and orbital in many electron atoms		
12	1	- Electron configuration.	Ch#6	
	1	- Electron configuration and the periodic table.	Ch#7	
	1	-Development of the periodic table and electron shells and the size of atoms.		
		<b>Second Exam</b>		
13	1	-Ionization energy.	Ch#7	
	1	- Electron affinity.	Ch#8	
	1	-Lewis symbols and the octal rule.		
14	1	-Ionic bonding and size of ions.	Ch#8	
	1	-Covalent bonding, bond polarity and electronegativity.		
	1	-Drawing Lewis structures and resonance structures.		
15	1	-Exceptions to the octet rule, strengths of covalent bonds, and oxidation numbers.	Ch#8	
	1	- Molecular Shapes, the VSEPR theory, polarity of molecules, and covalent bonding and orbital overlap	Ch#9	
	1	- Hybrid orbitals, multiple bond, and molecular orbitals.		
		<b>Final Exam</b>		

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	