Department	Pharmacy

Course Name	General Chemistry For engineering	Course No.	201143
Prerequisite	-	Credit Hours	3
Number & date of course plan approval	2016-2017	Brief Description	See form QF02/0409

Course Objective	1- An introductory course and is aimed specifically at the needs of students in the pharmacy, nursing, and science. 2- Achieved 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. 3- Learned 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. 4- Become familiar with commonly encountered units of measurements specially those describing solutions and know how to prepare and work with such solutions. 5- Attained an understanding of the major types of chemical bonding and how that relates to the structure of compounds. To enhance the ability of subjects related to basic knowledge in kinetics and equilibrium
Intended Learning Outcomes	Learning Outcomes for General Chemistry • 1-to understand the molecular nature of all phases of matter • 2-to understand the various ways of depicting chemical compounds and chemical reactions • 3-to develop an ability to solve basic quantitative problems regarding the properties of molecules, chemical equilibria, and chemical kinetics • 4-to develop the ability to appropriately apply this knowledge to general scientific problems in various fields of science and engineering..

Course Topics	1. Introduction: Matter and Measurement 2. Atoms, Molecules, and Ions 3. Stoichiometry: Calculations with Chemical Formulas and Equations 4. Aqueous Reactions & Solution Stoichiometry. 5. Thermochemistry. 6. Basic Concepts of Chemical Bonding. 7. Molecular Geometry and Bonding Theories. 8. Chemical kinetics 9. Chemical equilibrium.		
Text Books	Chemistry, The Central Science, Brown , LeMay , Bursten and Murphy , Prentice Hall , 11th Edition (2009)		
References	1. General chemistry, Ebbing and Gammon, Houghton Mifflin , 9th edition, 2009. 2. Chemistry, change, McGraw Hill, 9th edition, 2007. 3. Chemistry, Zumdahl and Zumdahl, Houghton Mifflin, 7th edition, 2007. 4- Chemistry, The Molecular Nature of Matter and Change, Silberberg,McGraw Hill,3ed edition,2003.		
Grade Determination	1st Exam = 25% 2nd 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
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. -First Exam.	Ch#3	
7	1 1 1	- Solution composition and Properties of solutes in aqueous solution. -Acids, bases, and salts. -Ionic equations.	Ch#4	
8	1 1 1	-Metathesis reactions. - Introduction to oxidation - reduction reactions. -Solution Stoichiometry and chemical analysis	Ch#4	
9	1 1 1	- The nature of energy and 1st law of thermodynamics. - Enthalpy and Enthalpies of reactions	Ch# 5	
10	1 1 1	- Calorimetry - Hess's law - Enthalpies of formation	Ch# 5	

Week	Hours	Subjects	Chapters in Textbook	Notes
11	1 1 1	- Electron configuration and the periodic table. -Lewis symbols and the octal rule. - Ionic bonding and size of ions.	Ch#6 Ch#8	
12	1 1 1	- Covalent bonding, bond polarity and electronegativity. -Drawing Lewis structures and resonance structures. - Exceptions to the octet rule, strengths of covalent bonds, and oxidation numbers.	Ch#8	
13	1 1 1	- Second Exam - Molecular Shapes, the VSEPR theory, covalent bonding.VBT theory and Hybrid orbitals. - Factors that affect reaction rates. - Reaction rates, and the rate law.	Ch#9 Ch# 14	
14	1 1 1	- Concentration and rate, and the change of concentration with time - Temperature and rate and reaction mechanisms catalysis.	Ch# 14	
15	1 1 1	- the concept of equilibrium and equilibrium constant. - Heterogeneous equilibrium. - Calculating equilibrium constant. - Application of equilibrium constant. Le Chatelier's principle - Final Exam	Ch# 15	

Approved by Dept. Chair		Date of Approval	

Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	
Office No.	
Extension **Email**	
Office hours	