CHEM 101 SYLLABUS

Text book: Raymond Chang, Chemistry, 10th edition, 2010

Topics	Text book pages	Number of Lecture
Chapter 1: Chemistry: The Study of Change		
1.4 Classifications of Matter: substances and mixtures, elements and compounds **1.5** The Three States of Matter **1.6** Physical and Chemical properties of Matter: intensive and extensive properties **1.7** Measurement: SI units, mass and weight, volume, density, temperature scales **1.8** Handling Numbers: scientific notation, significant figures, accuracy and precision **1.9** Dimensional Analysis in Solving Problems: conversion factors, a note on problem solving	**10 - 30**	
Review and Exercises		
Chapter 2: Atoms, Molecules and Ions		
2.2 The Structure of the Atoms: the electron, radioactivity, the proton and the nucleus, the neutron **2.3** Atomic Number, Mass Number and Isotopes **2.4** The Periodic Table **2.5** Molecules and Ions: molecules, ions **2.6** Chemical Formulas: molecular formulas, empirical formulas, formula of ionic compound **2.7** Naming Compounds: ionic compound, molecular compound, acids and bases, familiar inorganic compound	**43 - 68**	
Review and Exercises		
FIRST MIDTERM EXAM		
Chapter 3: Mass Relationships in Chemical Reactions		
3.1 Atomic Mass: average atomic mass **3.2** Avogadro's Number and the Molar Mass of an Element **3.3** Molecular Mass	**80 - 87**	
3.5 Percent Composition of Compounds **3.6** Experimental Determination of Empirical Formulas: determination of molecular formulas **3.7** Chemical Reactions and Chemical Equations: writing chemical equations, balancing chemical equations **3.8** Amounts of reactants and products **3.9** Limiting Reagents **3.10** Reaction Yield	**88 - 107**	
Review and Exercises		
Chapter 4: Reactions in Aqueous Solutions		
4.4 <u>Only</u>combinationreactions, decomposition reactions, combustion reactions	**139 - 141**	
4.5 Concentration of solution	**147 - 149**	
Review and Exercises		

Chapter 5: Gases		
5.1 Substances That Exist as Gases **5.2** Pressure of a Gas: SI units of pressure, atmospheric pressure, **5.3** The Gas Laws: the pressure-volume relationship: Boyle's Law, the temperature-volume relationship: Charles's and Gay-Lussac's law, the volume-amount relationship: Avogadro's Law **5.4** The Ideal Gas Equation: density calculation, the molar mass of a gaseous substance **5.5** Gas Stoichiometry **5.6** Dalton's law of Partial Pressures	**174 - 201**	
Review and Exercises		
SECOND MIDTERM EXAM		
Chapter 6: Thermochemistry		
6.1 The Nature of Energy and Types of Energy **6.2** Energy Changes in Chemical Reactions **6.3** Introduction to Thermodynamics: the first law of thermodynamics, work and heat **6.4** Enthalpy of Chemical Reactions: enthalpy, enthalpy of reactions, thermochemical equations, a comparison of ΔH and ΔE **6.5** Calorimetry: **Only** specific heat and heat capacity	**230 - 246**	
6.6 Standard Enthalpy of Formation and Reaction: the direct method, the indirect method (Hess's law)	**252 - 258**	
Review and Exercises		
Chapter 12: Physical Properties of Solutions		
12.1 Types of Solutions **12.2** A Molecular View of the Solution Process **12.3** Concentration Units: types of concentration units, comparison of concentration units **12.4** The Effect of Temperature od Solubility: solid solubility and temperature, gas solubility and temperature **12.5** The Effect of Pressure on the Solubility of Gases **12.6** Colligative Properties of Nonelectrolyte Solutions: vapor-pressure lowering (Raoult's Law), boiling-point elevation, freezing-point depression, osmotic pressure, using colligative properties to determine molar mass	**514 - 539**	
Review and Exercises		
TOTAL HOURS		**42**

Distribution of the 100 grades over semester:

	Grades	
Practical		**30**
1st midterm	**15**	
2nd midterm	**15**	
Final exam		**40**
Total		**100**

FINAL EXAM WILL BE IN ALL TOPICS

الإختبار النهائي سيكون في جميع مواضيع المقرر