Chem 103: Chemistry I, Fall 2008

Lecture Schedule

Section F0F, Lectures 3:00 – 4:15 pm Mon. & Wed., Phillips 117

Date M	Date W	Lecture Topics	Readings
SEPTEMBER			
	3	**Class Overview**	
		Unit I - An Historical Overview of Chemistry	
8		• An introduction to some jargon; learning to speak like a chemist	**1.1**
		• Chemistry, from the dark arts to science	**1.2**
		• A scientist's approach to understanding nature	**1.3**
		• Some strategies to use in solving chemical problems	**1.4**
	10	• Taking measurements	**1.5**
		• Expressing the uncertainty in the measurements taken	**1.6**
		• The chemist's view of matter: atoms, elements, compounds & mixtures	**2.1**
15		• Some observations that lead to the atomic view of matter	**2.2**
		• John Dalton's (1766-1844) postulates for the atomic view of matter	**2.3**
		• Some observations that led to the nuclear model for the structure of the atom	**2.4**
	17	• The modern view of atomic structure and the elements	**2.5**
		• Arranging the elements into a (periodic) table	**2.6**
		• Energy and matter	**1.1**
22		• Different forms of energy and their interconversions	**6.1**
		• Heat energy and chemical change	**6.2**
		Unit II - The Elements and the Structure of Their Atoms	
	24	• The nature of light and other forms of electromagnetic energy	**7.1**
		• What happens when light interacts with matter	**7.2**
		• Some behaviors which light and matter share	**7.3**
29		• How the recognition of these behaviors led to a radical new view of matter: The quantum-mechanical model of the atom	**7.4**
OCTOBER		• The development of the periodic table	**8.1**
		• Some characteristics of atoms that have more than one electron	**8.2**
	1	• The quantum-mechanical model of the atom is reflected in the periodic table	**8.3**
		• The periodic trends observed for three key properties of elements	**8.4**
6		• How the electronic structure of the elements affect their chemical reactivity	**8.5**
	8	**Exam I (Units I & II)**	
		Unit III - Combining Atoms to Make Compounds, Part I: Ionic Compounds	
13		• Atoms bind together to form compounds	**2.7**
		• The three different types of chemical bonds	**9.1**
		• The ionic bond	**9.2**
	15	• Describing the structure of ionic compounds with formulas and names	**2.8**
		Unit IV - Chemical Bookkeeping: Stoichiometry	
20		• The concept of a mole, which is a very large group of atoms or molecules	**3.1**
		• Determining the formulas for a compound	**3.2**
		• Writing and balancing a chemical equation for a chemical reaction	**3.3**
		• Calculating the amounts of reactants consumed and the products formed in a chemical reaction	**3.4**
	22	• The stoichiometry of solutions	**3.5**

Date M	Date W	Lecture Topics	Readings
		Unit V - Reshuffling the Atoms in Compounds: Chemical Reactions and Chemical Properties	
27		• Mixtures	**2.9**
		• Water as the solvent in a solution mixture	**4.1**
		• Reactions of ionic compounds in solution, which form precipitates	**4.2**
	29	• Reactions of acids and bases	**4.4**
		• Oxidation-reduction (redox) reactions	**4.5**
NOVEMBER			
3		• The fate of elements that participate in redox reactions	**4.6**
		• The reversibility of reactions and the equilibrium state	**4.7**
	5	**Exam II (Units III, IV & V)**	
		Unit VI - Combining Atoms to Make Compounds, Part II: Covalent Compounds	
		(Last day to withdraw with a **W** on your transcript)	
10		• Bonding atoms together to make compounds	**2.7**
		• Describing covalent compounds with formulas and names	**2.8**
		• The covalent bond	**9.3**
		• Bond energies and chemical change	**9.4**
		• Using electronegativity to predict the bonding type and bond polarity	**9.5**
	12	• The metallic bond	**9.6**
		• Using Lewis dot structures to depict molecules and ions	**10.1**
		• Using the valence-shell electron-pair repulsion (VSEPR) theory to predict molecular shape	**10.2**
17		• Molecular shape and molecular polarity	**10.3**
		• Valence-bond theory and hybrid orbitals	**11.1**
	19	• Forming covalent bonds through orbital overlap	**11.2**
		Unit VII - The States of Matter: Physical Interactions and Physical Properties	
24		• The Gas Laws	**5.3**
		• The physical states of matter and phase changes	**12.1**
		• A quantitive description of phase changes	**12.2**
	26	• Intermolecular Forces	**12.3**
DECEMBER			
1		• The liquid state and its physical properties	**12.4**
		• Water and its unique physical properties	**12.5**
	3	**Exam III (Units VI and VII)**	
8		• The solid state and its physical properties	**12.6**
	10	**The calm before the storm**	
	17	**The storm: Final Exam 1:00 - 2:50 pm**	