Honors Chemistry - Semester 1 outline

Chapter 1

1. Chemistry - What is it ?
2. Matter and properties
3. Element – symbols

Chapter 2

Measurements

1. Metric system
2. Density
3. Conversion factors
4. Accuracy and precision
5. Significant figures
6. Scientific notation

Chapter 3

1. Atomic theory, history
2. Atoms
    a. Sizes
    b. Atomic numbers
    c. Mass numbers
    d. #p, #e, #n
    e. Average atomic mass (weighted avg.)
    f. Mass←→moles ←→#atoms
        i. Molar mass
        ii. Avogadro's number

Chapter 4

1. Electromagnetic radiation
    a. Wavelength, frequency, energy, strength
    b. How EM radiation produced
        i. Electron movement, creates types of "light"
2. Electron notations
    a. Electron configuration
    b. Orbital notation
    c. Shorthand notation, noble gas notation

Chapter 5

1. History of periodic table
2. Block/group properties – s, p, d, f
3. 5 properties (definitions, trends and why)
    a. Atomic radii
    b. Ionization energy
    c. Electron affinity
    d. Ionic radii
    e. Electronegativity

Chapter 6

1. Determine bond type - ionic, polar-covalent, n-polar covalent
    a. bond length, energy
2. Properties of Ionic cmpds
    a. Show e- gained/lost
3. Metallic bonding
4. Properties of covalent compounds
    a. Show e- shared
    b. Draw Lewis structure
    c. e- dots
5. Geometric shapes
    a. ABE formulas
    b. Shape names - linear, bent, etc……
    c. Molecular forces
        1. Dipole
        2. Hydrogen bonding
        3. London forces

Chapter 7

1. Nomenclature
    a. Binary ionic
    b. Binary covalent
    c. Ionic polyatomic
    d. Acids
2. Oxidation numbers
3. Mass, MM, moles for cmpds (formulas) & % composition
4. Determining chemical formulas from masses
    a. Empirical and molecular

Chapter 8

1. Chemical reactions (symbols, setup)
2. Types of reactions
    a. Synthesis, Decomp, Single Replacement, Double replacement, Combustion
3. Activity Series
    a. Do reactions actually occur?