



### Honors Chemistry

2013-2014

#### Course Description:

Honors Chemistry is an intensified introduction to the discipline of chemistry. All topics covered in the standard chemistry course are included but are studied in greater depth and with increased emphasis on inter-relationships between the topics and problem solving.

In the solution of problems, students will need to employ higher levels of mathematical and abstract reasoning skills than in the standard course.

#### Course Content:

- I. Measurement and Calculations
  - Measurement, accuracy, and precision
    1. SI units
    2. scientific notation
    3. significant figures
  - Calculations by factor label technique
- II. Matter and its Changes
  - Matter and energy 1.definitions 2.fundamental laws & relationships
  - Properties of matter
    1. physical
    2. chemical
    3. intensive
    4. extensive
  - Changes in matter
    1. 1. physical
    2. 2. chemical
  - Classes of matter
    1. heterogeneous vs. homogeneous
    2. solutions and substances
    3. elements, compounds, and mixtures
    4. classes of elements
- III. The Structure of Matter
  - Atomic structure
    1. nucleus
      - neutrons and protons
      - isotopes
    2. electrons
    3. Avogadro's number and the mole
    4. atomic and molar mass
  - Electromagnetic spectrum
    1. basic relationships

- 2. Bohr atom equations
- Electron cloud
  - 1. quantum theory
  - 2. electron notations
  - 3. Periodic Law and the periodic table
- IV. Formulas and Equations
  - Chemical bonding
    - 1. ionic bonds
    - 2. covalent bonds
  - Chemical compounds
    - 1. writing formulas
    - 2. percent composition
    - 3. empirical formulas
    - 4. molecular formulas
  - Equations and mass relations
    - 1. balancing equations
    - 2. predicting equations
    - 3. mass-mass calculations
    - 4. limiting reactants
    - 5. percent yield
- V. Solids and Liquids
  - Properties of Liquids
    - 1. diffusion
    - 2. surface tension
    - 3. evaporation and boiling
  - Properties of solids
    - 1. melting point
    - 2. crystals
    - 3. amorphous solids
  - Changes of state
    - 1. physical equilibria
    - 2. LeChâtelier's Principle
    - 3. vapor pressure
    - 4. phase diagrams

#### Required Textbooks and/or Other Reading/Research Materials

The textbook for this classes is well reviewed and is widely used for honors level classes.

*Introductory Chemistry: Concepts and Critical Thinking, 6<sup>th</sup> ed.*, by Charles H. Corwin.  
Pearson Prentice Hall, ©2011.

#### Course Requirements:

Each student is required to complete all test, labs, and assignments. Failure to do so will affect student's overall grade.

A scientific calculator is required for this course.

#### Grade Components/Assessments:

Grades will be based on a point system that will be converted into overall percentages. The following methods will be used to assess and evaluate student performance.

Assessments: 45 – 55% for the year

Laboratory: 40 – 50% for the year

Assignments: 10 – 20% for the year

Each marking period is worth 20% of a student's overall grade. The midterm and final exam are each worth 10% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
<b>Midterm</b>	<b>10%</b>
Quarter 3	20%
Quarter 4	20%
<b>Final</b>	<b>10%</b>

Required Summer Reading/Assignments:

There are no summer reading or other assignments for this course.