Print Date: 7/17/14

Course Objectives/Course Outline
Spokane Community College

Course Title: **Introduction to Chemistry-Online**
Prefix and Course Number: **CHEM 114**

Course Learning Outcomes:
By the end of this course, a student should be able to:

- Understand entry-level chemistry concepts

Course Outline:

I. Chemical Terms and Measurements
   A. Chemistry
   B. Matter & energy
   C. Scientific method
   D. Units and reliability of measurements
   E. Density
II. Chemical Elements and the Periodic Table
   A. Atomic-structure
   B. Subatomic particles
   C. Periodic Table, an introduction
   D. Physical and chemical properties
   E. Classification of matter
III. Introduction to Chemical Calculations and Chemical Equation
   A. Compounds and the chemical formula
   B. Avogadro's number and the mole
   C. Physical and chemical changes
   D. Balancing chemical equations
IV. Atomic Structure and the Periodic Table
   A. Atomic structure and theory
   B. Hydrogen spectrum and Bohr's theory
   C. Quantum mechanical model of the atom
   D. Electronic structure of the atom
   E. Periodicity
V. Chemical bonds and Nomenclature
   A. Valence electrons and the chemical bond
   B. The types of chemical bonds; ionic, covalent, and metallic
   C. Ion formation and the ionic bond
   D. The covalent bond: dot structures and VSEPR theory
   E. Elecronegativity and molecular polarity
   F. Nomenclature of simple compounds
VI. Gases, Liquids and Solids
   A. States of matter; solids, liquids and gases
   B. Kinetic-molecular theory
   C. Energy and phase changes; melting and boiling points
VII. Chemical Stoichiometry and Reaction Rates
   A. Conservation of Mass
   B. Stoichiometry
   C. Collision theory and reaction rates
   D. Energy and chemical changes

VIII. Water and Solutions
- A. Hydrogen bonding and polarity of water
- B. The dissolving process; solubility and equilibrium
- C. Solution concentrations
- D. Electrolytes, non-electrolytes, and weak electrolytes
- E. Adds and bases; and introduction
- F. Solution Stoichiometry and titration
- G. pH and buffers