Course Objectives/Course Outline
Spokane Community College

Course Title: **Intro to Chemistry: w/Lab**
Prefix and Course Number: **CHEM& 121**

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

- I. Atomic Theory
  - A. Composition of Atoms
  - B. Electron Structure of Atoms
  - C. Electronic Configurations
  - D. Periodic Table
- II. Measurements in Chemistry
  - A. Making Measurements
  - B. Significant Figures
  - C. Converting Units
  - D. Laboratory Experiments, Gathering and Recording Observations, Analyzing Data, and Presenting Results in Written Form
- III. Ionic Compounds
  - A. Ion Formation
  - B. Ionic Bonds
  - C. Naming Ionic Compounds
  - D. Formulas of Ionic Compounds
  - E. Properties of Ionic Compounds
- IV. Covalent Compounds
  - A. Formation of Covalent Bonds
  - B. Covalent Compounds and Lewis Structures
  - C. Covalent Bonds and Electronegativity
  - D. Properties of Covalent Compounds
  - E. Naming Covalent Compounds
  - F. Formulas of Covalent Compounds
- V. Chemical Reactions
  - A. Balancing Chemical Equations
  - B. Predicting the Products of Precipitation, Acid-Base Neutralization, and Redox Reactions
  - C. Ionic Equations
  - D. Stoichiometric Calculations
- VI. Equilibrium and Kinetics
  - A. Concepts of Chemical Equilibrium
  - B. Enthalpy Changes
  - C. Free Energy
  - D. Reaction Rates

VII. Gases, Liquids and Solids
  A. Kinetic Molecular Theory
  B. Gas Laws
  C. Intermolecular Forces
  D. Changes of State
VIII. Solutions
  A. The Solution Process
  B. Properties of Solutions
  C. Concentration
  D. Solubility
  E. Stoichiometric Calculations
IX. Acids and Bases
  A. Properties of Acids and Bases
  B. Acid-Base Reactions
  C. Acidity and the pH scale
  D. Buffers
  E. Titration
X. Nuclear Reactions
  A. Radioactivity
  B. Balancing Nuclear Equations
  C. Nuclear Decay and Applications
  D. Nuclear Fission and Nuclear Fusion
XI. Laboratories
  A. Perform laboratory experiments pertaining to the above chemical concepts, record observations, gather and analyze data, and present the results in written form