Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

CHE 1311 - College Chemistry I

Division: Science, Mathematics and Engineering

Department: Chemistry

Credit Hour Total: 4.0 **Lecture Hrs:** 3.0 **Lab Hrs:** 2.0

Prerequisite(s): DEV 0025OR DEV 0075

Date Revised: April 2015

Course Description:

A university-parallel course in chemistry for the nonscience major. Atomic theory, periodic law, chemical bonds, chemical reactions, states of matter, solutions, acids and bases and the impact of chemistry upon the world and the environment. Three classroom, two lab hours per week. Traditional testing (proctored or in Testing Center) is used in all online sections.

General Education Outcomes:

- Critical Thinking/Problem Solving
- Oral Communication
- Values/Citizenship/Community
- Computer Literacy
- Information Literacy

Course Outcomes:

Periodic Table
Using the periodic table, describe the properties of the elements and name ionic and covalent compounds.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

States of Matter
Describe characteristics and properties of three states of matter.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

Chemistry and Our Environment
Apply chemistry concepts to describe the causes and effects of global warming, air pollution, water pollution and ozone depletion.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

Assessment Method: Performance appraisals
Performance Criteria: Scores of at least "3" out of "4" in all areas of a rubric

Solutions
Describe the properties and terms used to describe different types of solutions including the acidity and basicity.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

Atoms and Molecules
Using the modern atomic theory, describe the structure of atoms and the formation of covalent and ionic bonds.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

Chemical Reaction
Describe chemical changes by using the mole concept, balanced equations, rates and equilibrium concepts, and energy changes.

Assessment Method: Locally developed exams
Performance Criteria: 70% or above correct answers to exam questions

Outline:

Introduction--Metric Units, Scientific Method, Density, Unit ConversionThe Chemical View of Matter--Classification of Matter, States of Matter, Chemical and Physical ChangesAtomic Theory--Subatomic Particles, Orbitals, Electron Configuration, Electromagnetic SpectrumPeriodic Table--Atomic Mass, Atomic Number, Isotopes, Periodic Law, Atomic RadiusThe Chemical Bond--Ionic Bond, Formula Writing, Covalent Bond, Molecular Geometry, Lewis Structure, Inorganic NomenclatureChemical Reactions--The Chemical Equation, Energy Changes, Rates and Equilibrium, MolesWater and Solutions--Solubility, Concentration Units, Osmosis, Properties of Water, Water Pollutants, Water PurificationAcids and Bases--Definitions of Acids and Bases, Neutralization, pH Scale, BuffersApplication to Society--Sources and Effects of Air Pollution, Ozone Depletion, Effect of UV radiation, Greenhouse Effect, Evidences and Effects of Global Warming, Acid Rain