

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): MAT 0100OR MAT 1110OR MAT 1130OR MAT 1445

Date Revised: September 2016

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 Competency
- ▣ Oral Communication Competency
- ▣ Values/Citizenship/Community Competency
- ▣ Computer Literacy Competency
- ▣ Information Literacy Competency

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 Conversion
The Chemical View of Matter--Classification of Matter, States of Matter, Chemical and Physical Changes
Atomic Theory--Subatomic Particles, Orbitals, Electron Configuration, Electromagnetic

Spectrum
Periodic Table--Atomic Mass, Atomic Number, Isotopes, Periodic Law, Atomic Radius
The Chemical Bond--Ionic Bond, Formula Writing, Covalent Bond, Molecular Geometry, Lewis Structure, Inorganic Nomenclature
Chemical Reactions--The Chemical Equation, Energy Changes, Rates and Equilibrium, Moles
Water and Solutions--Solubility, Concentration Units, Osmosis, Properties of Water, Water Pollutants, Water Purification
Acids and Bases--Definitions of Acids and Bases, Neutralization, pH Scale, Buffers
Application to Society--Sources and Effects of Air Pollution, Ozone Depletion, Effect of UV radiation, Greenhouse Effect, Evidences and Effects of Global Warming, Acid Rain