Alexandria Technical and Community College

CHEM 1405: Fundamentals of Chemistry

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites:
This course requires any of these seven prerequisite categories
1. MATH 0000 - Preparatory Math for Health Sciences (Number of Years Valid: 5)
   Or
2. A score of 1150 on test MN Comprehensive Assessment Math
   Or
3. A score of 18 on test ACT Math
   Or
4. A score of 2 on test Arithmetic
   Or
5. A score of 58 on test Accuplacer Intermediate Algebra
   Or
6. A score of 63 on test Accuplacer Elementary Algebra
   Or
7. A score of 74 on test Accuplacer Arithmetic

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

This course meets Minnesota Transfer Curriculum (MnTC) goal area 3. This course provides the learner with an understanding of the principles and theories of chemistry. It includes concepts of inorganic chemistry, basic rules of valence, atomic and molecular structure, laws of chemical combination, types of reactions, and gas laws. It also introduces the learner to the basics of modern organic chemistry. Lab experience is included. Prerequisite: College level math score on a placement test or a grade of "CR" in Preparatory Math for Health Sciences (MATH0000).

B. COURSE EFFECTIVE DATES: 12/09/1997 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Acid/Base Chemistry and Buffers
2. Elements, Atomic Theory and The Periodic Table
3. Gas Properties and Laws
4. Ionic and Covalent Compounds
5. Measurements, Significant Figures and Metric System
6. Most content has accompanying Lab Component
7. Polarity and VSEPR Theory
8. Stoichiometry
9. Thermodynamics, Reaction Rates and Equilibrium
10. Writing, Balancing, and Identifying Chemical Reactions
D. LEARNING OUTCOMES (General)
   1. The learner will demonstrate basic knowledge of organic chemistry with emphasis on functional groups, structures, and reactions.
   2. The learner will exhibit knowledge of inorganic chemical reactions, chemical quantities/concentrations and acids/bases.
   3. The learner will demonstrate knowledge of scientific measurement, matter and change, the periodic table, compounds and their bonds, and gases.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   Goal 03 - Natural Science
   1. Demonstrate understanding of scientific theories.
   2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
   3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted