

# Alexandria Technical and Community College

## CHEM 1500: General Chemistry I

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 1

OJT Hours/Week: \*.\*

Prerequisites:

This course requires any of these six prerequisites

MATH 0431 - Intermediate Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 5)

A score of 1158 on test MN Comprehensive Assessment Math

A score of 2 on test Algebra

A score of 22 on test ACT Math

A score of 50 on test Accuplacer College Level Math

A score of 250 on test Accuplacer NG Advanced Algebra Functions

Corequisites: None

MnTC Goals: Goal 02 - Critical Thinking, Goal 03 - Natural Science

This course meets Minnesota Transfer Curriculum (MnTC) goal areas 2 and 3. This course provides the learner with an understanding of the principles and theories of inorganic, physical, solution, and gas phase chemistry. It includes general chemistry principles of atomic structure; stoichiometry; solutions; bonding; thermochemistry; electronic structure; periodic properties of the elements; properties of solids, liquids and gases; molecular geometry; and intermolecular forces. The laboratory component introduces relevant techniques, methods, and instrumentation. This course is intended for chemistry majors and minors, biology majors, and pre-professional students. Fundamentals of Chemistry (CHEM1405) is recommended but not required. Prerequisites: College level mathematics score on a placement test or a minimum grade of "C" in Intermediate Algebra (MATH0431).

**B. COURSE EFFECTIVE DATES:** 01/09/2017 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Measurements, scientific figures, and metric system
2. Matter and energy
3. Atoms, ions, and molecules
4. Chemical bonding
5. Chemical reactions
6. Electrons in atoms
7. Molecular geometry
8. Most above content has accompanying lab component
9. Periodic table trends
10. Properties of gases
11. Solution chemistry
12. Stoichiometry
13. Thermochemistry

#### **D. LEARNING OUTCOMES (General)**

1. The learner will demonstrate knowledge of matter and energy.
2. The learner will demonstrate knowledge of the building blocks of matter - atoms, ions, and molecules.
3. The learner will demonstrate knowledge of atomic structure and the properties of elements.
4. The learner will demonstrate knowledge of chemical bonding.
5. The learner will demonstrate knowledge of bonding theories and molecular geometry.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

##### Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

##### 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.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted