Minnesota State University Moorhead

CHEM 110: Fundamentals of Chemistry

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

Students will study fundamentals of chemistry with laboratory applications. Topics include measurements, matter, energy, atomic theory, bonding, molecular structure, nomenclature, balancing equations, stoichiometry, solutions, acids and bases, gases, and basic organic chemistry. Upon completion, students should be able to understand and apply basic chemical concepts and demonstrate basic laboratory skills necessary for success in college-level science courses. MnTC Goal 3.

B. COURSE EFFECTIVE DATES: 08/25/2008 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Why do we call chemistry the study of matter?
2. What is the scientific method?
3. How do we classify matter? What are the three states of matter?
4. What are atoms made of?
5. How do we predict an ionic bond? What about the covalent bond?
6. How do we balance chemical equations?
7. What are the laws that govern the behavior of gases?
8. What is a colligative property?
9. What is an equilibrium constant?
10. What is Le Chatelier's Principle?
11. What are acids and bases and how do we define the strength of acids and bases?
12. What is the pH? What are buffers?
13. What is radioactivity? What is nuclear half-life?

D. LEARNING OUTCOMES (General)

1. Recognize the difference between ionic and covalent compounds.
2. Write the names and formulas of compounds commonly encountered in the field of health care.
3. Define the various measures of concentration and should be able to correctly use them in calculations.
4. Describe the concepts of pH, buffers, the difference between acids and bases, and be able to calculate the pH or the hydrogen ion concentration given relevant information.
5. Describe the property of gases, the relationships between gas pressure, volume, and temperature, and also be able to use them correctly in calculations.
6. Correctly use significant figures in calculations.

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. 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