Metropolitan State University

CHEM 107 : Chemistry, Society and the Environment

A. Course Description

Credits: 4

Prerequisites: MATH 098 Introduction to Mathematical Thinking
           OR
           MATH 102 Mathematics of Sustainability or placement at or above College Algebra on the university's assessment test.

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: Goal 03 - Natural Science, Goal 10 - People/Environment

Principles of chemistry as they apply to important environmental and societal issues. Topics will be drawn from: energy sources, alternative fuels, radioactivity, global warming, ozone, pollution, acid rain, plastics and polymers, drug development, nutrition and genetic engineering. Includes lab. Intended for students preparing for Chem 111 General Chemistry as well as students seeking a general education science course with lab.

B. Course Effective Dates: 08/14/2011 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Propose and assess alternative solutions to environmental problems.
2. Articulate and defend the actions they would take on various environmental issues.
3. Explain and apply knowledge of the nature of matter and energy, atoms, molecules, chemical reactions, chemical bonding, the periodic table, solid, liquids, gases and chemical solutions and use that knowledge in problem-solving in chemistry.
4. Understand and apply knowledge of measurement, and use that knowledge in the proper conduct and interpretation of laboratory investigations.
5. Demonstrate quantitative reasoning skills and competency with arithmetic and statistics at a level appropriate for graduates of bachelors degree programs.
6. Demonstrate mastery of the chemistry concepts and vocabulary necessary for success in a General Chemistry course for science majors, and for informed citizenship.

E. Learning Outcomes (MN Transfer Curriculum)

Goal 03 - Natural Science

1. 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.
2. Demonstrate understanding of scientific theories.
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.

Goal 10 - People/Environment

1. Propose and assess alternative solutions to environmental problems.
2. Explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.

3. Describe the basic institutional arrangements (social, legal, political, economic, religious) that are evolving to deal with environmental and natural resource challenges.

4. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.

5. Articulate and defend the actions they would take on various environmental issues.

G. Special Information

Note: First day attendance required except by instructor permission.