

Minnesota State University Moorhead

CHEM 304: The Environment and You

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

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

This course explores the chemical underpinnings of a variety of environmental issues, such as pollution, energy production, and recycling, and how these issues play out in social, political, and economic arenas. Students will also have the opportunity to independently explore topics in further detail in their papers. Credit not applicable to a chemistry minor. MnTC Goal 3, 10, WI.

B. COURSE EFFECTIVE DATES: 08/27/2007 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Formation and mitigation of air, water and land pollution such as smog and greenhouse gasses, catalytic converters, smokestack scrubbers, precipitation, chelation, etc.
2. Fuels (traditional, hydrogen, biofuels) and electricity - refinement, production, transportation and combustion.
3. Economics and environmental impact of alternative solutions to human problems.

D. LEARNING OUTCOMES (General)

1. Define an environmental problem, and constrain it so that meaningful discussions about alternatives can occur where opposing sides do not talk past each other.
2. Understand the chemical and scientific underpinnings of current environmental issues.
3. Think globally about environmental issues, including but not limited to, energy and pollution.
4. Write intelligently about these topics.
5. Discern between good resources and poor resources.
6. Understand key scientific concepts such as the conservation of matter as it applies to the environment.
7. Analyze specific data.

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

Goal 10 - People/Environment

1. Explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.
2. Discern patterns and interrelationships of bio-physical and socio-cultural 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. Propose and assess alternative solutions to environmental problems.

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.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted