

# Fond du Lac Tribal and Community College

3/12/03

## COURSE OUTLINE

Date submitted: 9/15/04 Date approved: 10/6/04

Department and Course Number: CHEM 2060

Title of Course: Environmental Chemistry

Number of credits: Lecture 3 Lab 1

Catalog/Course Description:

This course will introduce students to key concepts and skills necessary for the study of environmental chemistry. Chemistry of natural systems, both terrestrial and aquatic, will be explored. Understanding these processes is fundamental to protection of our ecosystems and supporting the concept of sustainable development. Lecture and lab.

**Placement for Success prerequisites:** (See instruction sheet)

Prerequisite: CHEM 1001 Aspects of Inorganic Chemistry or  
CHEM 1010 General Chemistry I

Reading: Level 2 English/Writing: Level 3 Math: Level 4

Recommended course materials and resources, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers. If applicable.

Environmental Chemistry, 2<sup>nd</sup> Edition. 1999. Baird, Colin. W.H. Freeman and Company, New York, or similar text.

Lab Manual and notebook.

Relationship of proposed course to the department mission and goals

The course promotes the Department's desire for academic excellence and learning. Special emphasis on research-based science education is essential for those trained in environmental science and chemistry. The course will also address the importance of critical thinking and decision making within a scientific and cultural framework. The course will be transferable and applicable to the bachelor's degree in sustainable development in order to provide for educational enhancement based on the individual student's academic goals.

Course goals:

Goal: Introduce students to the current breadth of knowledge of chemical constituents in the environment including the potential for contamination and clean up and disruptions in natural chemical cycles.

Goal: Give students the background to read and evaluate current literature in environmental chemistry.

Goal: Give students opportunities to explore environmental chemistry in the laboratory setting.

Learning outcomes: (A minimum of one learning outcome shall be provided for each course goal)

State a minimum of two assessment instruments for each learning outcome.

Outcome: Students will be able to describe and identify major environmental contaminants and their impacts.

Assessment: Written examinations

Assessment: Homework assignments and/or group projects

Outcome: Students will be able to describe major chemical cycles in the environment and the impacts of their disruption by human activity and natural disturbance.

Assessment: Written examinations

Assessment: Homework assignments and/or group projects

Outcome: Students will be able to critically evaluate current literature in environmental chemistry.

Assessment: Literature review papers

Assessment: Research project

Outcome: Students will be able to identify, measure, and manipulate chemicals in laboratory and field environments.

Assessment: Laboratory assignments

Assessment: Research project

Course content:

(Provide an outline of major topics covered in course)

Weekly Schedule

1. Introduction to environmental chemistry
2. Stratospheric Chemistry: Ozone
- 3 & 4. Ground level air chemistry and air pollution
5. The greenhouse effect and global climate change
- 6 & 7. Energy use, CO<sub>2</sub>, emissions, and their environmental consequences

- 8 & 9. Toxic organic chemicals
- 10. Toxic heavy metals
- 11 & 12. Chemistry of natural waters
- 13. Purification of polluted waters
- 14. Wastes, soils, and sediments

Placement for Success prerequisite

Check one of each area--English, reading, and math

Prerequisite	X
English level 1	
English level 2	X
no English prerequisite	
Reading level 1	
Reading level 2	
Reading level 3	X
no Reading prerequisite	
Math level 1	
Math level 2	
Math level 3	
Math level 4	X
no Math prerequisite	