

SYLLABUS
CHE 6501, Chemistry in the Environment
Spring, 2003

Credit: Three semester hours
Class Period: 6:00-8:45 PM, Tuesdays
Classroom: MCC 402

Instructor: Dr. Jerry Cannon
Office: MCC 415
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E-mail: cannon@mc.edu
Office hours: Monday-Friday, 2:00-4:00

Text: *Environmental Chemistry, A Global Perspective*, Gary W. vanLoon and Stephen J. Duffy, Oxford University Press, 2000.

Videos: Selected videos from “Race to Save the Planet”, “Films for the Humanities and Sciences”, and “ The World of Chemistry”.

Prerequisites: Fifteen hours of chemistry.

Disclaimer: Although we expect to conduct the course according to the following, we reserve the right to make modifications if circumstances dictate.

Course description: A study involving the application of basic chemical principles to current environmental problems.

Rationale: Many of the serious problems facing mankind in the future are brought about by the changes in the chemical makeup of the environment resulting from the increasing need for energy, food, and the variety of materials necessary for life as we know it. These problems must be addressed and require an understanding of chemical principles in order for effective solutions to be found.

Student Objectives: Students completing the course will be able to:

1. understand the basic chemical principles behind the current environmental problems.
2. become better able to make informed judgements concerning environmental problems discussed in the media.
3. become more aware of the necessity of caring for the environment.
4. have a better understanding of the current environmental topics by researching the literature for their reports and from listening to other student reports.

Attendance: Your attendance at all class meetings is expected. Roll will be checked each night. Absences are recorded on the grade report that is mailed at the end of the semester. If a regular class meeting is missed, it is the student's responsibility to obtain any assignments or instructions that were given by the instructor. Missing a class is **not** an excuse for not preparing for the next class meeting or not having an assignment ready. In the event of an extreme emergency **and** an excused absence a make-up test will be given. The test must be made up prior to the graded tests being returned to the class. A student will receive a grade of F in the course immediately upon accumulating four absences.

Methods of Instruction: The course will be comprised of three parts: lecture, videos, and student reports. The lecture material will follow the text material with additional handouts from current literature. The videos will be 20-40 minutes and cover specific areas of environmental problems from various areas of the world. Each student will write a paper and make an oral presentation to the class on a topic of current interest in the area environmental chemistry.

Grading: Three tests and a final examination will be given during the semester, each with a value of 100 points. Each student will give a presentation to the class on a topic of current environmental importance. Topics must be approved by the instructor. The presentation should last approximately 30 minutes and be accompanied by appropriate handouts and/or AV materials and a written paper with complete references listed. The paper and presentation will be graded on a 100 point scale to give a total of 500 points for the entire semester.

The grading scale is :

90-100%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
60-69%	D
Below 60%	F

Academic integrity: Mississippi College students are expected to be honest. Please refer to the *2002-2003 Mississippi College Graduate Bulletin*, page 13, for discussion of plagiarism and cheating.

The last day to drop a class without receiving a grade is Friday, March 31.

Topic Outline-Environmental Chemistry
Spring 2003

- I. Chemistry of the atmosphere
 - A. Regions of the atmosphere
 - B. Reactions and properties of levels
 - C. Stratospheric chemistry
 - 1. Ozone formation and turnover
 - 2. Null cycles
 - 3. Antarctic and Arctic ozone hole
 - D. Tropospheric chemistry
 - 1. Smog
 - 2. Photochemical smog
 - 3. Exhaust gases
 - 4. Precipitation
 - a. Composition of rain
 - b. Acid rain
 - E. Aerosols
 - F. Chemistry of urban and indoor atmosphere
 - 1. Urban pollution
 - 2. Indoor air pollution
 - G. Global climate
 - 1. Atmospheric Composition
 - 2. Greenhouse gases

- II. Chemistry of the hydrosphere
 - A. Physical and chemical properties of water
 - B. Distribution of species
 - C. Gases in water
 - D. Organic matter in water
 - E. Metals in water
 - F. Chemistry of colloids
 - G. Microorganisms in the hydrosphere
 - H. Water pollution

- III. The terrestrial environment
 - A. Soil formation and properties
 - 1. Chemical properties
 - 2. Physical properties
 - B. Chemistry of solid wastes
 - 1. Mining and metal production
 - 2. Organic and urban wastes
 - C. Organic biocides
 - 1. Stabilities
 - 2. Mobility and leachability