

**Southeast Missouri State University**  
**Course Syllabus**

**Department of Chemistry**

**Course Number: CH350/EV350**

**Title of Course: Environmental Chemistry**

**Proposed: Spring 1999**

**I. Catalog Description and Credit Hours:**

A study of the sources, reactions, transport, and fate of chemical entities in the air, water, and soil environment as well as their effects on human health and the environment. (3)

**II. Prerequisites:**

CH234 Organic and Biological Chemistry, or CH340 Essentials of Organic Chemistry, or CH343 Organic Chemistry II, or consent of the instructor.

**III. Objectives of the Course:**

- A. To introduce students to the chemistry of our environment.
- B. To introduce students to the chemical effects of organic/inorganic chemicals on the environment.
- C. To introduce students to the benefits and consequences of introducing anthropogenic chemicals, such as pesticides and plastics, into the environment.
- D. To introduce students to atmospheric chemistry.
- E. To introduce students to the handling and disposal of hazardous substances.
- F. To introduce students to recycling, the use of alternative fuels, green chemistry, and other methods of reducing the amount of anthropogenic substances introduced into the environment.
- G. To introduce students to the chemistry of water and water pollution.
- H. To introduce students to genotoxicity-the action of chemicals on genetic materials.
- I. To introduce students to risk assessment.

**IV. Expectations of Students:**

- A. Students are expected to attend class, to participate in class discussions, and to complete course assignments.
- B. Students are expected to demonstrate proficiency in the chemical concepts and principles underlying both natural environmental processes as well as those caused by introduction of anthropogenic chemicals into the environment.
- C. Students are expected to demonstrate a basic understanding of the ways in which pollution may be minimized by the proper handling and recycling of chemical wastes, and green chemistry.

## V. Course Outline

<u>Topics</u>	<u>Class Meetings</u>
Introduction to Environmental Chemistry	2
Energy	6
Fossil Fuels, Nuclear Energy, Renewable Energy	
Atmospheric Chemistry	9
Stratospheric Chemistry and Pollution	
Ground Level Air Chemistry and Air Quality	
Organic/Inorganic Pollutants, Acid Rain	
Greenhouse Effect and Global Warming	
Exam 1	1
Organic Chemicals	6
Pesticides, Herbicides, Insecticides, Polymers and Plastics	
Toxicological Chemistry	
Green Chemistry	6
Heavy Metals in the Environment	6
Sources	
Toxicological Chemistry and Genotoxicity of Heavy Metals	
Exam 2	1
Environmental Chemistry of Water	6
Properties of Water	
Water Pollution	
Water Treatment and Purification	
Hazardous Wastes	5
Sources, Reduction, Treatment, and Disposal	
Final Exam	

## VI. Textbook

Environmental Chemistry, 2nd Ed., 1999, by Colin Baird

## VII. Basis of Student Evaluation

Hour Exams	200 points
Final Exam	150 points
Class Participation	50 points
<u>Assignments</u>	<u>150 points</u>
Total	550 points

Grade Scale

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	<60%

**VIII. Programs Serviced by This Course**

B.S. in Environmental Science

B.S. in Secondary Education, Science Option

B.A. in Chemistry