

**The Chemistry of Natural Processes**  
**Environmental Chemistry**  
Chemistry 320  
**Spring 2020**

Instructor: Dr. M.A. Engen    Office: PA 346

Office Hours: hours posted, by appointment, or open door

Email: [mengen@winona.edu](mailto:mengen@winona.edu)

Web Page: <http://course1.winona.edu/mengen/>

Course Purpose

The purpose of this chemistry course is to provide students with the knowledge to better understand and make informed judgments related to environmental issues. With the many environmental concerns facing our world today, and the likelihood of many more in the future, a basic understanding of the chemistry associated with many of the Earth's natural processes and the effects humankind have on these processes will help students become more informed members of our society in regards to the environment.

Course Description: Environmental Chemistry

This course is a study of chemical concepts and the application of those concepts to processes in natural systems. Concepts such as kinetics, thermodynamics, equilibrium, acid-base chemistry and electrochemistry will be especially important. With a solid understanding of these concepts, then an introductory study of current environmental issues, emphasizing the chemistry and chemical interactions underlying these topics will be addressed. The topics may include, but are not limited to global warming, depletion of stratospheric ozone, ground level air chemistry and air pollution, organic chemicals in the environment, toxic heavy metals, chemistry of natural waters, and energy production and its environmental consequences. Prerequisites: one year of general chemistry or consent of instructor. Offered every other year.

Lectures:            320                    T, Th 11:00-11:20            PA 307

Lab:                    320-1                    W     1:00-3:50                SL 364

Text:                    “*Environmental Chemistry – Any edition.*” Colin Baird and  
Michael Cann, Freeman- **Required**  
(Solutions Manual – optional)

**Marking Distribution**

**Grading Scale**

<b>Lab</b>	<b>25 %</b>	<b>A</b>	<b>88%</b>
<b>Exams (3)(15% each)</b>	<b>45 %</b>	<b>B</b>	<b>76%</b>
<b>Articles, Problems</b>	<b>15 %</b>	<b>C</b>	<b>64%</b>
<b>Packets</b>	<b>15%</b>	<b>D</b>	<b>52%</b>

<i>Tentative Schedule</i>						<i>Schedule</i>
<b>Week</b>	<b>Week of</b>	<b>Lecture</b>	<b>Chapter</b>	<b>Laboratory</b>		<b>Approx.</b>
1	01/13	Atmospheric Chemistry	1-5			
2	01/20					
3	01/27					
4	02/03					
5	02/10	Climate Change	6-7	Exp. 1		
6	02/17			Exp. 2		
7	02/24			Exp. 3		
8	03/02			Presentation		Exam I
	03/09	Spring Break				
9	03/16	Water Chemistry	13			
10	03/23			Exp. 4		
11	03/30					
12	04/06	Contaminants	10,11,15			Exam II
13	04/13			Presentation		
14	04/20					
15	04/27	Nutrient Cycles - C, N, S, P			Presentation	
16	04/04	Finals Week				Exam III