

Instructor:

Dr. Jeremiah K.N. Mbindyo

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Office hours: M, W 10 a.m.- 12:00 noon; T 12:00-1:00 p.m. (Other times can be scheduled by arrangement by email).

Class hours: Lecture: M, W, F 9-9:50 a.m.

Required materials:Text: Environmental Chemistry by Colin Baird, 5th edition. (ISBN-13: 978-1429277044).

Additional reading materials to be assigned in class.

Course Description:

This course is a study of the foundational principles of Environmental Chemistry and Sustainability. It meets the university requirements of a "D" course. By the end of the course, you should be able to:

- Explain the terms environmental chemistry, green chemistry and sustainability and how they are interrelated.
- Identify the major sources of chemicals introduced into the environment and describe their reactivity and eventual fate.
- Describe the chemical processes involved in water and waste water treatment.
- Describe the effects of organic and inorganic pollutants on health.
- Explain the atmospheric chemical processes that lead to acid rain and photochemical smog.
- Discuss and demonstrate an understanding of Global Climate Change.
- Demonstrate an understanding of the major sources of energy and describe examples of sustainable and renewable sources of energy.
- Describe how environmental issues relate to and impact various aspects of culture and social justice.

Environmental issues will be discussed from a chemistry perspective. Case studies of environmental problems as social justice issues will be drawn from the US and around the world. You are encouraged to share your own experiences and views about the issues discussed in class.

Course format:

Three 50 minute in-person lectures/discussion meetings per week. You are expected to attend all class meetings and to participate and contribute to discussions.

Course Grades

Assignments/presentations	20 %
Hour exams	50 %
Participation	5 %
Final Exam	25 %

Grade Distribution

A		B		C		D		F	
A	90-100%	B ⁺	85-87%	C ⁺	74-77%	D ⁺	66-67%	< 60%	
A ⁻	88-89%	B	80-84%	C	70-73%	D	64-65%		
		B ⁻	78-79%	C ⁻	68-69%	D ⁻	60-63		

Tentative of Topics

Week	Date	Topic	Chapter	Comments
I - INTRODUCTION, TOXIC INORGANIC SUBSTANCES AND WATER TREATMENT				
1.	8/22-26	Introduction	Intro	
2.	8/29-9/2	Toxic Heavy Metals	12	
3.	9/7-9	Water and wastewater treatment	11	
II - TOXIC ORGANIC COMPOUNDS				
4.	9/12-16	Pesticides	13	
5.	9/19-23	Dioxins, Furans and PCBs	14	Exam 1 (9-23)
6.	9/26-30	Environmental Estrogens	15	
III - AIR POLLUTION AND ATMOSPHERIC PROCESSES				
7.	10/3-7	Stratospheric Ozone	1	
Mon-Tue 10/10,11 – Fall Break				
8.	10/12-14	The ozone holes	2	
9.	10/17--21	Ground level air pollution	3	Exam 2 (10/21)
IV - CASE STUDIES				
10,11	10/24-28	Case Studies/presentations	-	
12.	10/31-11/4	Air Pollution and Health	4	
V - ENERGY SOURCES AND GREENHOUSE EFFECT				
13.	11/7-11	The Greenhouse <i>effect</i>	5	
14.	11/14-18	Global Climate Change	6	
15.	11/21	Renewable energy I	7,8	
11/23-25 Thanksgiving break				
15.	11/28-12/2	Renewable energy I	7,8	
16.	12/5-9	Renewable energy II / Final Exam	9	Final Exam 2 (12/07)
Final Exam Wed Dec 7 – 8-10 a.m.				

University Class Attendance Policy

The University supports departmental and faculty class attendance policies that are reflective of and consistent with University approved guidelines. Faculty will include their class attendance policy in their syllabi given to all students in their classes at the start of the semester.

University approved guidelines:

1. **Students are expected to attend all classes.** It is the student's responsibility to complete all course requirements even if a class is missed. If a student misses class for an officially excused reason, then he/she is entitled to make up the missed work but only at the convenience of the faculty member. Responsibility for materials presented in, assignments made for, and tests/quizzes given in regularly scheduled classes lies solely with the student.
2. **The University policy is that faculty will excuse absences for the following reasons:**
3. personal illness, b. death or critical illness in the family, c. participation in a university-sponsored activity, d. jury duty e. military duties, or f. religious holidaysf.

Faculty judge the validity of student absences from class within the University's approved guidelines and may require documentation for excused absences. Faculty will evaluate any reason, other than those listed above, for a student missing class and determine whether the absence is justified. In these circumstances, a student may make up missed work at the discretion of the instructor.

4. **In the case of foreseeable absences, students are encouraged to notify the faculty member in advance.** A student who will miss class due to participation in an official University activity must notify the instructor well in advance of the activity to assure that the absence is excused.

Appeals:

As with any academic issue, students may exercise their right to appeal adverse attendance decisions. Please refer to the current undergraduate catalog for the complete Academic Appeal procedure.

Title IX Statement

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at <http://www.millersville.edu/socialeq/title-ix-sexual-misconduct/index.php>.