

Chemistry of the Environment, Fall 2023
Chem 1200

Concerned about our Environment?

Interested in learning about Climate Change?

Thinking about Energy utilization and its impact on Society?

These interrelated topics will be discussed in “**Chemistry of the Environment, Chem 1200**”

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Class: T/Th 12-1:30 PM, CHEM 514

Lester Office Hours: TBA, Chem 262 (Cret Wing)

Schelter Office Hours: TBA, 3003 Vagelos

Penn Environmental Innovations Initiative

Climate Week at Penn: The climate emergency is everyone's business. Join us during Climate Week at Penn to find your place in the climate movement. September 18-22, 2023

UN Climate Change Conference (UNFCCC COP 28), 30 November - 12 December 2023

Book: *Environmental Chemistry*, Colin Baird & Michael Cann, 5th ed. (W.H.Freeman, © 2012)

Hardcover or eTextbook (Kindle Edition) available through Amazon

Supplementary Material will be available on our class Canvas site.

Chapter 1 Stratospheric Chemistry: The Ozone Layer

Chapter 2 The Ozone Holes

Chapter 3 The Chemistry of Ground-Level Pollution

Chapter 5 The Greenhouse Effect

Chapter 6 Energy Use, Fossil Fuels, CO₂ Emissions and Global Climate Change

Chapter 4 Acids: Acid Rain and Ocean Acidification

Chapter 8 Renewable Energy and Sustainability

Chapter 9 Nuclear Energy

Chapters 10-11 Water Chemistry and Water Pollution

Overall Course Goal

This course is designed to provide an overview of Chemistry of the Environment. It is constructed such that all students (irrespective of their major area of study) can learn about the chemistry of the atmosphere, energy use and environmental impact, and water. Environmental Chemistry is very interdisciplinary; therefore, we will cover subjects including chemistry, physics, geology, biology, environmental policy and others.

This course is designed to fulfill the following requirements:

NATURAL SCIENCE AND MATH SECTOR 7

Components of Course and Grading

Homework Assignments / Class Participation

Midterm and Final Exams

Canvas site will be updated frequently. Lecture notes and assignments will be available on Canvas. We will also post important announcements and links to related news articles and websites.

Participation: Regularly attending class and participating is critical to your learning and success in the course.

Exams: You will be tested on material that has been presented in class and in the homework. Make-up exams will be granted for university-approved reasons (medical illness with a doctor's note, family emergency with proper documentation, and approved religious holidays) only.

Homework: Homework assignments are required and must be turned in on time. Assignments, unless otherwise indicated, are to be completed individually.

Course pre-requisites: Prior knowledge of Excel is not required, but you will be required to use Excel to complete some of your assignments.

Community in the Chemistry Department at Penn: One of the goals of the course is to develop a community with a shared appreciation of chemistry, where everyone has a sense of belonging. This can only happen if all members of the course community, the instructors and students, work together to create a supportive, inclusive environment that welcomes all students, regardless of their race, ethnicity, gender identity, sexuality, religious beliefs, physical or mental health status, or socioeconomic status. Diversity, inclusion and belonging are all core values of this course and of Penn Chemistry. All participants in this course deserve and should expect to be treated with respect by all other members of the community. If you have any concerns in this area or are facing any special issues or challenges, you are encouraged to discuss the matter with the instructors (set up a meeting by email) or with Candice Adams in the Chemistry Undergraduate Office: chemugrad@sas.upenn.edu.

Formal and Informal Accommodations: The Chemistry Department at Penn is committed to assisting students requiring special accommodations for circumstances that are registered with the Office of Student Disability Services (SDS; <https://www.vpul.upenn.edu/lrc/sds/>). If you are not formally registered with SDS and experience learning disabilities or other issues that affect your ability to fully participate and learn in this class, you are encouraged to check-in with me or with the Chemistry Undergraduate Office (see above) so that we can help you to secure the resources to promote your success.

Mental Health Resources: Here at Penn Chemistry, we care about the holistic well-being of our undergraduates. While focusing on academics, it is important to attend to your physical and mental health as well. Anxiety and depression are all too common in high-stress environments. If you are concerned about yourself or a friend, please reach out to either the Chemistry Undergraduate Office or the Undergraduate Biochemistry Program (see below) who will direct you to the appropriate resources. If you, or anybody you know, is in need of mental health care, please refer

to the following campus resources: (1) Counseling and Psychological Services, CAPS 215-898-7021 (off hours and weekends 215-349-5490); (2) Department of Public Safety 215-898-7333, or 511 if imminent danger to themselves or others; (3) Finding Programs for Student Wellness through the VPUL; and (4) Student Health Services.