

EVPP 506 SCIENCE OF THE ENVIRONMENT I

GEORGE MASON UNIVERSITY

3 Credit Hours Spring 2021

4:30-7:10 p.m. Tuesdays, ONLINE

Instructor: Dr. Esther Peters

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Backup Instructor: Dr. Cynthia (Cindy) Smith

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Office Hours: Tuesdays, 3:15–4:15 p.m. or by appointment (send e-mail request) and you will receive a Zoom link to meet at the scheduled time with Dr. Peters.

Sign up for Mason Alert (e.g., weather closings, emergencies) at

<https://ready.gmu.edu/masonalert/>

See Emergency Preparedness Guides: <https://ready.gmu.edu/be-prepared/>

Description: Environmental science is explored in this 2-semester sequence providing the foundation in chemistry (I) and biology (II) required for graduate students with social sciences backgrounds seeking a degree and career in environmental science and policy. This course will examine the multitude of environmental problems (global warming, energy sources, air and water pollution) facing society with an emphasis on understanding the chemistry involved. The basic principles of chemistry will be reviewed and applied in a manner that will enable the student to develop a framework for evaluating current and future threats to the environment.

Course Objectives:

- To equip students with the knowledge needed to understand the basic chemical nature of environmental problems.
- To prepare students for more advanced environmental science courses.
- To relate molecules to structures and to functions, that shape and control the biosphere.
- To enable students to think critically about the chemistry involved in environmental issues and their solutions.
- To help students feel more confident engaging scientists, academics, and policy makers in discussions on the chemical aspects of environmental problems.

Course Expectations:

As with any graduate offering, ***this will not be an easy course***. The successful student **must read assignments, study supporting materials, and prepare assignments outside of class**. Self-directed study skills are important. Students need to organize material logically and communicate well orally and in writing. **The emphasis will be on understanding the basics.**

Please turn off cell phones or pagers before class begins. **Professional behavior and adherence to the GMU Honor Code are expected. Absenteeism should be limited to illness or emergencies.** Students should notify the instructor before class whenever possible if they must miss a class. Students will need to work with the instructor to determine whether class activities can be made up later, although this is likely to be difficult due to schedule conflicts. Students should contact classmates to obtain notes and assignments.

Professional Communication: Students are required to use their GMU email accounts for all class related communications. All emails to the instructor will be respectful and contain a professional introduction (i.e., Dear Dr. Peters) and will be signed with your full name. Students are encouraged to have a professional email signature. If emailing regarding content for a missed class, please connect with your classmates.

Disability Services: If you are a student with a disability and you need academic accommodations, please contact the Office of Disability Services (ODS) at (703) 993-2474, <https://ds.gmu.edu/>, and let Dr. Peters know so that we can coordinate your needs.

Assignments and Due Dates

Assignments should be prepared neatly (either hand- or type-written or computer-generated). Be sure to proofread your work to double-check facts, grammar, spelling, and consistency, completeness, and correctness. This book may help:

Ross-Larson, B. 1996. *Edit Yourself: A Manual for Everyone Who Works With Words*. W.W. Norton & Co., New York, NY.

Missed Exams

A quiz will be given at the start of selected classes and mid-term and final exams will be given as indicated on the schedule. If a student is seriously ill or must miss the test for another reason, notify your professor, share your doctor's note, and options for completing the test will be discussed.

Course Textbook and Materials

This semester you will use a new textbook with online resources to help you learn.

In addition, materials will be posted on Blackboard during the course. The textbook we will use for the course is:

B.D. Fahlman et al. 2021. *Chemistry in Context: Applying Chemistry to Society*, 10th edition. McGraw-Hill Education.

Chemistry in Context Bundle (includes Connect Access Card with Print textbook and eBook)

ISBN: 9781264091355

Net Price: \$128

Chemistry in Context Connect Access Card (includes eBook)

ISBN: 9781260497045

Net Price: \$97

We are using this text with McGraw-Hill Connect to access their question banks and other resources that should be helpful in learning chemistry concepts. You need to purchase the Connect subscription to be able to use the pre-built assignments and it comes with access to their eBook. If you purchase the hard copy textbook, you will need to obtain the subscription access code, which can also be purchased in the GMU Bookstore. In case of issues, McGraw-Hill permits students to access the course and eBook temporarily for two weeks. In Blackboard, click on the tab in the left column "Video: How to Buy the Textbook and Access Connect" for instructions. Then click on the "McGraw-Hill Connect Link" and on that page click on "Go to My Connect Section." There you will be able to register/login, purchase the subscription, and access the course. Please let Dr. Peters know if you have any questions about this.

You will also find additional help in whatever biology textbook you used for EVPP 507, if you have taken it, as well as:

Spark Charts "Chemistry" available in the bookstore or online

<http://www.sparknotes.com/chemistry/>

Khan Academy "Chemistry" <https://www.khanacademy.org/science/chemistry>

Valuable web resources include:

<http://www.sparknotes.com/chemistry/>

<https://www.khanacademy.org/science/chemistry>

<http://www.onelook.com> (to look up terms)

And the YouTube videos in the *Crash Course Chemistry* series for another perspective!

Course Requirements

Besides learning core concepts in chemistry by listening to lectures, reading the textbook, and answering quizzes, students will prepare short presentations and take a midterm and a final exam. More information will be provided by the instructor.

Grading Criteria

The total grade received for this course will be based on the following assignments and assessments:

Percent Contribution to Total Grade		
Participation (45 + 35 for 7 Discussions)	10 %	80 pt
Five Quizzes (40 pt each, 1 dropped) and	20 %	160 pt
Five Short Presentations (32 pt each)	20 %	160 pt
Midterm Exam	25 %	200 pt
Final Exam	25 %	200 pt
		<hr/>
	100%	800 pts

An A+ will only be given to reward a truly outstanding effort and performance. Participation requires attendance in class and checking Blackboard for updates and notices at least once per week. The final grade will be based on this scale:

A+ = 100(+)-98, A = 97-90, A- = 89-88, B+ = 87-86, B = 85-80, B- = 79-78, C+ = 77-76, C = 75-70, F ≤ 69

Academic Integrity and our Honor Code

Academic Integrity <https://oai.gmu.edu/>

Honor Code <https://oai.gmu.edu/mason-honor-code/>

The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification. Students in this course should be aware of the following policies for completing work and taking examinations.

The Mason Honor Code Pledge: *To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University Community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set for this Honor Code: Student Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.*

It is important to note that materials produced for this course require creativity in organization and presentation, but that the information presented within the paper or other product must be properly acknowledged as to its source.

Diversity Policy: Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study, and personal growth. An emphasis on diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

Other Useful Campus Resources

- WRITING CENTER: B 213 Robinson Hall; 703-993-1200;
<http://writingcenter.gmu.edu>
- UNIVERSITY LIBRARIES: "Ask a Librarian" <https://library.gmu.edu/ask>
- COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS): 703-993-2380;
<http://caps.gmu.edu>
- LEARNING SERVICES: 703-993-2999 <https://learningservices.gmu.edu/>
• offers many good study skills workshops and academic coaching!
- ACADEMIC COUNSELING PROGRAM: 703-993-2380:
<http://caps.gmu.edu/learningservices/academiccounseling.php>
- Disability Services: <https://ds.gmu.edu/>

Tentative Schedule: The following weeks will include lectures on significant environmental topics and the chemistry needed to understand the topic at a professional level. Students are expected to prepare for each lecture by doing the assigned work prior to class. Assignments will include reading assigned chapters from the textbook and videos. These will be posted on Blackboard or in the PowerPoint PDFs. Students will also prepare short PowerPoint presentations (no longer than 10 minutes).

******TENTATIVE SCHEDULE FOR SPRING 2021******

EVPP 506 SCIENCE OF THE ENVIRONMENT I

Lecture and Reading Assignments

Week	Lecture	Reading or Other Assignments Due the Following Week
1 January 26	<p>Introductions, syllabus, overview of environmental science, measurements, units, uncertainties, scientific method, matter, elements, chemistry, and mercury contamination</p> <p>Overview of Chemistry</p>	<p>CinC: Chapter 1 Portable Electronics...</p> <p>BB: Week 1 Homework, Week 1 Quiz</p> <p>History of the world in 2 hours http://www.youtube.com/watch?v=qdLFCz1Y508</p> <p>Also browse http://www.scaleofuniverse.com/</p>
2 February 2	<p>Earth's Atmosphere, Air Pollution</p> <p>Select topics for next weeks' presentations</p>	<p>CinC: Chapter 2 The Air We Breathe</p> <p>BB: Week 2 Homework, Week 2 Quiz</p> <p><i>Prepare assigned short presentations</i></p>
3 February 9	<p>Solar Radiation</p> <p>Short presentations</p>	<p>CinC: Chapter 3 Radiation from the Sun</p> <p><i>Prepare assigned short presentations</i></p>

Week	Lecture	Reading or Other Assignments Due the Following Week
4 February 16	Climate and Change Short presentations	CinC: Chapter 4 Climate Change <i>Prepare assigned short presentations</i>
5 February 23	Water Resources Short presentations	CinC: Chapter 5 Water Everywhere... <i>Prepare assigned short presentations</i>
6 March 2	Toxicology Short presentations Review of first half of the semester	Study for Midterm Exam
7 March 9	Midterm Exam (Submit by March 15)	CinC: Chapter 6 Energy from Combustion
8 March 16	Energy Sources	Chapter 7 Energy from Alternative Sources; Chapter 8 Energy Storage <i>Prepare assigned short presentations</i>
March 23	Return Midterm Exam Short presentations	CinC: Chapter 9 The World of Polymers and Plastics <i>Prepare assigned short presentations</i>
9 March 30	Short presentations	CinC: Chapter 10 Brewing and Chewing; Chapter 11 Nutrition <i>Prepare assigned short presentations</i>

Week	Lecture	Reading or Other Assignments Due the Following Week
10 April 6	Short presentations	CinC: Chapter 12 Health & Medicine <i>Prepare assigned short presentations</i>
11 April 13	Short presentations	CinC: Chapter 13 Genes and Life <i>Prepare assigned short presentations</i>
12 April 20	Short presentations	Study for Final Exam
13 April 27	Final Exam Provided	Work on Final Exam
14 May 5	Submit Final Exam	

Notes: