

Point Loma Nazarene University
Department of Chemistry

**CHE4070 – Environmental Chemistry
Spring Term, 2025**

MWF, 12:15 – 1:20 pm in RLC 104
Lab: Wednesday, 2:45 – 5:45 pm, Sator 216

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Office hours: Monday, 2:30 – 3:30 pm; Friday, 2:30 – 3:30 pm; or by appointment.

Prerequisite

Successful completion of Analytical Chemistry (CHE2013) and Organic Chemistry I (CHE2094 and CHE2096L) are required.

Course Description

This 3-unit course covers the chemistry of Earth's environment, including the natural chemical processes as well as anthropogenic contributions. The environment in this context is divided into the atmosphere, the hydrosphere, the lithosphere, and anthrosphere. Particular emphasis is given to human influences in each of these "spheres," including the causes, effects, detection, prevention, and mitigation of pollution. Environmental pollution is a global problem, with many technological and cultural causes, and as such requires an understanding of numerous disciplines in order to solve. This course thus involves the integration of concepts from chemistry, biology, geology, ecology, atmospheric sciences, hydrology, toxicology, political science, and others.

Course Learning Outcomes

At the completion of this course, students will be able to:

- Apply knowledge from the course to environmental problems and solutions
- Discuss contemporary environmental science issues and the impact of environmental science in global and societal contexts
- Demonstrate knowledge of concepts and assumptions related to the processes impacting the fate of pollutants in the major environmental compartments at the Earth's surface (atmosphere, hydrosphere, geosphere)
- Synthesize and evaluate scientific information about the life cycle of environmental pollutants.

Required Textbook: *Environmental Chemistry*, Baird & Cann, 5th edition, Freeman, 2012. ISBN: 978-1-4292-7704-4

Recommended Textbook: *Quantitative Chemical Analysis*, Harris & Lucy, 10th edition. This was the textbook you used in the Analytical Chemistry course.

Lecture Materials: Lecture materials and other useful information will be available on Canvas.

Grading: The final grade will be determined as follows:

- Prelecture Questions, 10%
- Problem Sets, 10%
- Presentation, 20%
- Participation, 10%
- Midterm Exams, 30%
- Final Exam, 20%.

Letter grades will be assigned according to the following scale: A, 90 – 100%; B, 80 – 90%; C, 70 – 80%, D, 60 – 70%, F, below 60%.

Prelecture reading quizzes: A prelecture reading quiz will be available in canvas for each lecture class. The assignment will describe the reading to be completed before the next lecture and ask a few simple questions.

Problem Sets: Each chapter will have a problem set due two days after the last lecture of that material.

Presentation: Each student will deliver a 15–20 minute presentation discussing an environmental pollutant. You will need to summarize the sources, transport, and fates (including chemical reactions) of a single pollutant released into the environment. You will also need to find a published scientific research study that examines an environmental aspect of this pollutant and discuss the findings.

Participation: Various in-class activities will be graded during the semester. These could include discussions, worksheets, etc.

Exams: There will be three midterm exams during the semester and a final exam. The date of the midterm exams will depend on the pace of the class and at least one week notice will be given. The final exam will be on Wednesday, May 7th, 10:30 am – 1:00 pm.

Program Learning Outcomes:

ENVS PLO 2: Students will apply key concepts and principles in analytical chemistry including quantitative and instrumental analysis. ENVS PLO 2 is assessed in lecture using exams.

ENVS PLO 3: Students will use standard instrumentation and laboratory equipment to conduct scientific experiments and perform chemical characterization and analyses. Instruments assessed: GC, IR, UV-vis, HPLC, ICP. ENVS PLO 3 is assessed directly by faculty laboratory instructors' observation of students' use of instruments.

PLNU Mission
To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Final Examination Policy⊕

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Traditional Undergraduate Records: Final Exam Schedules](#) site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

Incompletes and Late Assignments

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

Spiritual Care*

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

State Authorization⊕

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

PLNU Copyright Policy⊕

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.]

PLNU Recording Notification⊕

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU Academic Honesty Policy⊕

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU Academic Accommodations Policy⊕

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. The EAC makes accommodations available to professors at the student's request.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any special accommodations.

Sexual Misconduct and Discrimination*

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be

aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

PLNU Attendance and Participation Policy⊕

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an “F” grade.

Note: The information below must be included under the “PLNU Attendance and Participation Policy” Section if you are teaching an Online or Hybrid course.

Lomabooks Instructions for Students⊕:

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials.

For more information about **LomaBooks**, please go: [HERE](#)