

# Analytical Chemistry Lab, CHE2013L Spring 2024

## 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.



Welcome to Analytical Chemistry Lab! This is a 0 unit chemistry lab course, which runs concurrently with the lecture component, taught by the Department of Chemistry at PLNU. This will be an opportunity to put many of the skills you learned throughout General Chemistry into practice as you explore the quantitative aspect of chemical analysis.

## INSTRUCTORS

Ariane Jansma, Ph.D. (Lab Coordinator and Section 1 Instructor)

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Brian Balisi (Section 2 Instructor)

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## OFFICE HOURS

Location: Rohr Science, 3<sup>rd</sup> floor Chemistry Department Office Suite, Room 330

Mon, Wed, Fri            8:00 am – 9:30 am

Mon, Wed, Fri            11:00 am – 12:00 pm

Thurs.                      8:00 am – 11:00 am

## LECTURE SCHEDULE

**Section 1:** Tuesday and Thursday 11:10 am – 12:30 pm

Latter Hall 02

FINAL EXAM: Thursday, May 2 at 10:30 am

## LAB SCHEDULE

**Section 1:** Tuesday            8:00 – 11:00 am            SA 221

**Section 2:** Tuesday            6:30 – 9:30 pm            SA 221

## REQUIRED COURSE MATERIALS

- Course Website: Canvas <https://canvas.pointloma.edu/courses/71259>
- Scientific Calculator
- Laptop Computer with Excel (or equivalent spreadsheet program, not Google)
- Access to Google Docs for Laboratory Notebooks
- Lab Coat and Goggles, may be purchased during first laboratory meeting

## COURSE DESCRIPTION

Examination of the theories and techniques of quantitative chemical analysis, with some emphasis on instrumental methods. Classical methods such as gravimetry, titrimetry, spectroscopy, electrochemistry, and chromatography will be discussed and used.

## LEARNING OUTCOMES

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

- Evaluate analytical data by determining error and uncertainty and using statistical methods such as the F test, t test, paired t test, and Q test.
- Solve equilibrium problems related to precipitation, acid-base, complexation, and oxidation-reduction reactions.
- Understand the concepts of various gravimetric methods such as precipitation, volatilization, and particulate gravimetry.
- Explain the principles of titrimetric methods including acid-base, complexometric, redox, and precipitation titrations.
- Understand the concepts of various spectroscopic and electrochemical methods.
- Perform analytical laboratory techniques related to the topics listed above.

## PREREQUISITE

General Chemistry II, CHE1053

## COREQUISITE

Analytical Chemistry Lecture, CHE2013 (separate syllabus specific to lecture)

## EVALUATION:

The activities described below will contribute to your total lab grade, which will count toward 20% of your total grade for the course, according to the following:

Participation and Pre-Lab Assignments	40%
Laboratory Notebook Entries	40%
Final Lab Report	10%
Final Lab Presentation	10%

Letter grades will be assigned at the end of the overall course according to the following scale:

	<b>A</b> 93 – 100%	<b>A-</b> 90 – 92.9%
<b>B+</b> 87 – 89.9 %	<b>B</b> 83 – 86.9 %	<b>B-</b> 80 – 82.9 %
<b>C+</b> 77 – 79.9 %	<b>C</b> 73 – 76.9 %	<b>C-</b> 70 – 72.9 %
<b>D+</b> 67 – 69.9 %	<b>D</b> 63 – 66.9 %	<b>D-</b> 60 – 62.9 %
<b>F</b> < 59.9 %		

## ATTENDANCE AND PARTICIPATION

Your overall score in lab is directly related to your physical presence and participation so punctual attendance in lab is mandatory. You are responsible for all the material and announcements covered during lab. Participation will be measured through the pre-lab assignments, which will have a portion of points dedicated to punctual attendance. Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. This policy would refer to the entire CHE2013 course since they are directly linked to one another. See [Class Attendance](#) in the Undergraduate Academic Catalog.

## LABORATORY NOTEBOOK ENTRIES

Electronic notebooks will be available via a shared Google folder and you will have access to your individual folder within the shared drive. It is your responsibility to maintain your notebook. At the end of each project, you will download your notebook entry as a pdf and upload to Canvas for grading and credit. No late Notebook entries will be accepted.

## FINAL LAB REPORT

You will select a lab at the end of the semester and write up a formal lab report for that specific project.

## FINAL LAB PRESENTATION

Using the project you selected for your report, you will put together a 10 minute presentation which will be given to your lab section on the last lab meeting of the semester.

## **LAB SCHEDULE**

The detailed lecture and lab schedule is available on the course website (Canvas).

## **COURSE WEBSITE**

<https://canvas.pointloma.edu/courses/71259> (CHE2013L) will be used constantly as a repository for all course materials.

## **SPIRITUAL CARE**

PLNU strives to be a place where students 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 if you have prayer requests, you can contact the [Office of Student 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 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. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

## **ARTIFICIAL INTELLIGENCE (AI) POLICY**

Use of Artificial Intelligence (AI) tools (e.g. ChatGPT, iA Writer, Marmot, Botowski) is not permitted, and use of these tools will be treated as plagiarism. This will also hurt you in terms of exam preparedness so doing your own work will only help you.

## **PLNU ACADEMIC ACCOMMODATIONS POLICY**

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. 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 issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

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 and/or if they do not wish to utilize some or all of the elements of their AP in that course.

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.

## **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](http://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](mailto:counselingservices@pointloma.edu) or find a list of campus pastors at [pointloma.edu/title-ix](http://pointloma.edu/title-ix).