

Analytical Chemistry, CHE2013 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! This is a 3 unit chemistry course, which includes both a lecture and laboratory 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. I am excited to work with you this semester.

INSTRUCTORS

Ariane Jansma, Ph.D.

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Email: ajansma@pointloma.edu

Brian Balisi (Lab)

Email: bbalisi@pointloma.edu

OFFICE HOURS

Location: Rohr Science, 3rd 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 TEXTBOOK AND COURSE MATERIALS

- **Textbook***: Daniel C. Harris, Quantitative Chemical Analysis, W.H. Freeman and Company, 10th edition 2016. ISBN-13: 9781319044053 (hard cover with Sapling code) or ISBN-13: 9781319044060 (loose leaf with Sapling code).
- **Online Homework**: Sapling Learning www.saplinglearning.com/login, bundled with hard cover or loose leaf textbook or purchased separately
- Course Website: Canvas <https://canvas.pointloma.edu/courses/71258>
- Scientific Calculator
- Computer with Excel
- Lab Coat and Goggles, may be purchased during first laboratory meeting

OPTIONAL MATERIAL

- Daniel C. Harris, Solution Manual for Quantitative Chemical Analysis, W.H. Freeman and Company, 9th edition 2016. ISBN-13: 9781464175633.

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 Lab, CHE2013L (separate syllabus specific to lab)

EVALUATION:

The activities described below will contribute to your total course grade according to the following:

Lecture Midterm Examinations (3)	45%
Homework (Achieve)	10%
Pre-Class/Canvas Assignments	10%
Lecture Final Examination	15%
Laboratory Work	20%

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

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

ATTENDANCE AND PARTICIPATION

You are responsible for all the material and announcements covered during lecture and lab. 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. See [Class Attendance](#) in the Undergraduate Academic Catalog.

ONLINE HOMEWORK

Homework will be assigned regularly through Sapling Learning (www.saplinglearning.com/login). Go to [Sapling Registration](#) for instructions on how to enroll in the course site. Sapling's technical support team can be reached by phone or this [webform](#). Successful completion of homework is essential in mastering the course material.

PRE-CLASS ASSIGNMENTS and IN-CLASS ACTIVITIES

Pre-class assessments and in-class activities will be assigned in Canvas.

EXAMS

Three lecture midterm exams and a final lecture final exam will be given during the course. Make-up exams will be arranged for the midterm exams only if the instructor is contacted prior to the scheduled exam time and then only if you present an institutionally valid excuse. There will be no make-ups or alternate day/times scheduled for the final exam unless 3 finals are scheduled for the same day, as per university policy.

LECTURE AND LAB SCHEDULE

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

COURSE WEBSITE

[Canvas](#) (CHE2013-SP24 – Analytical Chemistry) will be used constantly as a repository for all course material such as lecture notes, problem sets, etc.

LABORATORIES

Attendance is mandatory at all laboratory sessions. If you must miss a lab for a university-accepted valid reason, you should make prior arrangements with the instructor to see if you can attend the other lab section. A lab absence will result in a zero on that lab report. Experiments will be performed either individually, with a partner, or in a group. Each partner/group member must keep a record of their work in their own laboratory notebook to submit individually. Each partner must independently weigh samples, carry out titrations, etc. They cannot work together by participating in a joint titration, etc., with one partner functioning as a guide/consultant. Each partner must report at least one determination in the final value. Separate, individual lab notebook pages or a formal lab report will be submitted by each student. Each lab grade will be based on lab notebook entries, the accuracy and precision of the quantitative unknown determinations, or formal lab report. Late labs will be penalized by deducting 5% for every day past the due date. See the Laboratory syllabus for additional details.

PLNU FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination **on its scheduled day and time**. The final examination schedule is posted on the [Undergraduate Records](#) 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.

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. 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.