School of STEM, Department Chemistry

Advanced Biochemistry, CHE4050

3 units

Fall 2026

Section 1: MWF, 11:00 – 11:55 am, Latter 102
Section 2: MWF, 12:15 – 1:10 pm, RLC101
Final Exam: Wednesday, December 17, 4:30 – 7:00 pm

Course Information	**Specifics for the Course**
Instructor:	Dr. Ariane Jansma
Voicemail:	(619) 849-2623
Email:	ajansma@pointloma.edu
Office location	Rohr Science, 3rd floor Chemistry Department (330) Office is directly across from entrance (334)
Office Hours:	**MWF**: 7:30 – 8:15 am (before class – tea available) **T**: 10:00 am – 2:00 pm (**until 10/21**) **T**: 9:30 – 11:00 am, 12:30 – 2:00 pm (**after 10/21**) **R**: 12:30 – 2:00 pm

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.

Course Description

Detailed analysis of protein and membrane structure. Includes quantitative approaches to the study of enzymes, catalytic mechanisms of enzymes, and a survey ofthe major metabolic pathways of carbohydrates, lipids, amino acids and nucleic acids. Course includes one three-hour laboratory each week.

Program Learning Outcomes for Chemistry as applied to this course:

- Apply key concepts and principles in analytical chemistry, **biochemistry**, inorganic chemistry, organic chemistry, and physical chemistry.
- Use standard instrumentation and laboratory equipment to conduct scientific experiments and perform chemical characterization and analyses.
- Be prepared for post graduate studies or a science-related career.

Course Learning Outcomes

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

- Recognize and reproduce the structures of the 20 amino acids
- Apply specific properties of these amino acids to protein folding and activity
- Identify and evaluate enzymatic active sites based on appropriate chemical reactivity
- Apply specific chemical reactions to the processes of metabolism and photosynthesis
- Recognize how and when cells must degrade or apoptosize
- Outline defining mechanisms and lifecycles of several representative viruses

Required Texts and Recommended Study Resources

- **Biochemistry, Concepts and Connections:** by Appling (with access to Mastering Chemistry), (ISBN: 9780321839763)
- **PyMOL Software:** You will receive a tutorial the first week of class to help you install the student version of PyMOL (free) on your personal computer
- **Lap top computer:** We will be working in groups throughout the semester using the protein visualization software PyMOL. If this is not possible, please contact me and we will work out options.
- **Scanning app:** Many assignments will be submitted electronically but will require writing and/or drawing. If you do not have an electronic pencil, you need an app that will scan a paper and generate a pdf for you to submit to Canvas. There are free options available (do not pay).
- **Do your own work:** Each assignment has been carefully designed to prepare you for exams. While there are obviously AI-based methods to assist in completing assignments, doing so will absolutely hurt your ability to be prepared for in-class exams and future work in biochemistry. Use YOUR voice (not someone else's).

Assessment and Grading

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

- Mid-Term Examinations (3)…… 45%
- Homework Assignments…….. 20%
- Quizzes…… 15%
- Final Examination…….. 20%

Mid-Term Examinations

Exams will be held during the lab sections. You may attend your assigned lab section or choose an alternative lab section to attend for the exam, based on what works best for your schedule. The classroom location will be announced prior to the exam.

Homework Assignments

Homework will consist of a combination of assignments through Mastering Chemistry (**Accessed through Canvas**) as well as additional homework assignments, all of which are found on Canvas. Please make sure you have access to Mastering Chemistry and can access the homework via Canvas within the first week of class.

Quizzes

This course will have quizzes throughout the semester to assess your understanding of the material as well as your preparedness for the Mid-Term exams.

Final Examination

The final exam for this class will include a comprehensive multiple choice exam covering material from the entire semester.

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.

Grades

Letter grades will be assigned at the end of the course for both lecture and lab based on your percentage of total possible points, according to the following scale, which will not be adjusted:

	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 %		

Course Credit Hour Information

In the interest of providing sufficient time to accomplish the Course Learning Outcomes stated above, this class meets the PLNU creid hour policy for a 3 unit class delivered over 16 weeks. It is anticipated that students will spend a minimum of 3.75 participation hours per credit hour on their coursework. For this course, students will spend an estimated 110 total hours meeting the course learning outcomes over 16 weeks. This is also a very individual plan, so focus on the time required for you to be successful.

Class Attendance and Assignments

We will spend time in class discussing the material and applying this information to questions which will be covered throughout the exams. It is in your best interest to attend class. Missed assignments can only be made up for full credit for excused absences.

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.

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 **LomaBooks** materials.

Artificial Intelligence (AI) Policy

The use of Artificial Intelligence (AI) tools (e.g., ChatGPT, iA Writer, Marmot, Botowski, GrammarlyGo, Perplexity, etc.) is **prohibited** in this course for any aspect of your work, including idea generation, drafting, editing, or final submissions. This course is designed to teach and assess your independent critical thinking, writing, and research skills without the assistance of AI technologies. Violations of this policy will be treated as breaches of academic integrity.

Content Warning

I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive various types of information. In biochemistry, all of the class content, including that which may be intellectually or emotionally challenging, has been intentionally curated to achieve the learning goals for this course. The decision to include such material is not taken lightly. These topics include the study of human disease, viral infection and biochemistry of opioid drugs. If you encounter a topic that is intellectually challenging for you, it can manifest in feelings of discomfort and upset. In response, I encourage you to come talk to me or your friends or family about it. Class topics are discussed for the sole purpose of expanding your intellectual engagement in the area of biochemistry, and I will support you throughout your learning in this course.

General Course Concerns

If you have a concern related to the content or structure of this course, please bring your concern(s) to me, Dr. Jansma, in a timely manner, so that we have the opportunity to discuss your thoughts and work together toward a solution.

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.

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.

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 distance education outside California.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that I will be recording each lecture section 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. Please consult the Academic Honesty Policy in the University Catalog for definitions of kinds of academic dishonesty and for further policy information.

PLNU Academic Behavior Policy

Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Students are expected to take the initiative to learn and conduct themselves in a mature and civil manner in the classroom environment. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to these behavioral standards may be subject to disciplinary action, including removal from class or further university sanctions. For a full definition of disruptive behavior, response procedures, and the appeal process, please consult the Academic Behavior Policy in the University Catalog.

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, by email or phone at 619-849-2533. 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 approved accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course.

Accommodations are not retroactive; as such, 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-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore, planning ahead is vital in establishing appropriate accommodations for equal access to this course. 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 eligibility 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 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. 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 or consult the list of campus pastors.

If you (or someone you know) has experienced other forms of discrimination or bias, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

Language and Belonging

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice-free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality. If you (or someone you know) has experienced other forms of discrimination, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

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Loma Writing Center

Getting feedback from the Loma Writing Center while you're in the process of working on an assignment is a great way to improve the quality of your writing and develop as a writer. You are encouraged to talk with a trained writing consultant about getting started on an assignment, organizing your ideas, finding and citing sources, revising, editing for grammar, and polishing final drafts, and more.

Walk-ins are welcome, but we recommend making an appointment in advance. For information about how to make in-person or online appointments, see Loma Writing Center webpage or visit the Loma Writer Center on the first floor of the Ryan Library, room 221.

- Appointment Calendar
- Website
- Email

Assignments At-A-Glance/Canvas Course Summary

Note: Faculty are required to either create assignments in Canvas so that there is a record by the end of the semester OR list the assignments in the syllabus to support the Records office in dealing with possible transfer credit, etc. In the Canvas syllabus function, please use the Show Course Summary checkbox to create a course schedule. Then cut and past the schedule into the syllabus you provide for the Assessment website.