

ADVANCED BIOCHEMISTRY

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 becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Welcome to CHE/BIO 4050, Fall 2021:

Chemistry/Biology 4050 is an upper division course cross-listed from the Departments of Chemistry and Biology. This **3 unit course** runs concurrently with CHE/BIO4050L and is designed to teach the fundamental principles of the chemistry involved in biological processes with an emphasis on protein structure and how it relates to function. The beauty of biochemistry is that it offers fun and excitement for everyone. The chemistry of biological systems is my favorite thing to talk about and I am confident we will have a fantastic semester together.

INSTRUCTOR

Dr. Ariane Jansma, Associate Professor

Voice Mail: 619-849-2623

Email: ajansma@pointloma.edu

Meet Prof J Video: <https://youtu.be/aVIAPTDrhPs>

OFFICE HOURS

Office hours will be conducted either hybrid or through zoom

Monday: 1:30 pm – 2:30 pm <https://pointloma.zoom.us/j/92167588783>

Tuesday: 12:00 pm – 1:30 pm <https://pointloma.zoom.us/j/98238298763>

Thursday: 11:00 am – 12:00 pm Sator 221 or <https://pointloma.zoom.us/j/95794209916>

Additional times are available by appointment

LECTURE SCHEDULE

Section 1: MWF 11:00 am – 11:55 am Taylor 312

Section 2: MWF 12:15 pm – 1:10 pm Taylor 312

LAB SCHEDULE

Lab Section 1: W 4:45 pm – 7:45 pm ST 221

Lab Section 2: R 8:00 am – 11:00 am ST 221

Lab Section 3: R 1:30 pm – 4:30 pm ST 221

REQUIRED TEXT BOOK and RECOMMENDED SUPPLIES

- **Biochemistry, Concepts and Connections**, by Appling (with access to Mastering Chemistry), (ISBN: 9780321839763)
REQUIRED
- **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
REQUIRED
- **Lap top computer**, we will be working in teams throughout the semester using the protein visualization software PyMOL. If this is not possible, please contact me and we will work out options.
REQUIRED/STRONGLY RECOMMENDED
- **Sleep**, it is highly recommended that you have at least 8 hours of sleep per night in order to be successful in this class as well as your other classes
STRONGLY RECOMMENDED

COURSE GOALS and LEARNING OBJECTIVES

At the end of the 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 apoptose
- Outline defining mechanisms and lifecycles of several representative viruses

Catalog Description: LECTURE: Detailed analysis of protein and membrane structure. Includes quantitative approaches to the study of enzymes, catalytic mechanisms of enzymes, and a survey of the major metabolic pathways of carbohydrates, lipids, amino acids and nucleic acids. Course includes one three-hour laboratory each week. LAB: An inquiry-based laboratory that is a co-requisite for [CHE 450](#). Letter graded.

LECTURE EVALUATION

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

- | | |
|---------------------------------|-----|
| • Lecture Examinations (3)..... | 40% |
| • Homework Assignments..... | 20% |
| • Quizzes..... | 20% |
| • Final Examination..... | 20% |

LECTURE EXAMINATIONS

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

HOMEWORK ASSIGNMENTS

Homework will consist of a combination of assignments through Mastering Chemistry (**Course ID: jansma45756**) and assignments posted to Canvas. Details of each assignment will be given as necessary. Please make sure you have access to Mastering Chemistry within the first week of class.

QUIZZES

This course will have quizzes posted to Canvas each Monday covering material from the previous week. Notes and other resources are not allowed during Canvas Quizzes. These quizzes are designed to prepare you for the exams and assess your understanding of the material. Often you will have multiple chances to select the correct answer and your highest score will be counted. Please use this as a resource for studying.

FINAL EXAMINATION

The final exam for this class will include a comprehensive multiple choice exam covering material from the entire semester. The questions are written in an ACS style in order to best prepare you for future standardized exams involving Biochemistry, such as the MCAT or Subject GRE.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted below as well as the Class Schedules site. No requests for early examinations or alternative days will be approved.

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:

	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 %		

CLASS ATTENDANCE

History has shown that regular attendance is necessary for success in this course. We will spend time in class discussing the material and applying this information to questions which will be covered in the exams. It is definitely in your best interest to attend class. Prior instructor notification via email is necessary for an absence to be excused. Missed assignments can only be made up for full credit for excused absences and students are responsible for all assignments and material covered. Lab attendance is mandatory, unless excused by the professor.

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 drop date or, after that date, receive the appropriate grade for their work and participation.

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.

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 ACCOMMODATION

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.

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 students have questions, a desire to meet with the chaplain or have prayer requests you can contact the [Office of Spiritual Development](#).

COURSE SCHEDULE

The Schedule for this course is included as a separate document so please refer to CHE/BIO4050 Schedule for details. The schedule is also available on our Canvas Site.