



**BIO4095 Section 2 Special Studies in
Biology: Molecular Biology
Spring 2023**

Meeting times: MWF from 1:30 - 2:35 pm	Instructor title and name: Dr. Helen Goodluck	
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Contact Hours: By email / Zoom / appointment		Course Units: 4
Text: Molecular Biology: Structure and Dynamics of Genomes and Proteomes		

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 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.

OVERVIEW

Welcome to Molecular Biology! This course will explore the mechanisms by which genes are expressed in prokaryotic and eukaryotic organisms. In addition, regulation of these processes will be emphasized. Recognizing these principles in everyday life and science and understanding the mechanisms behind them is key in in this class.

DESCRIPTION

A study of the regulatory mechanisms that govern gene expression in eukaryotic and prokaryotic cells and their viruses. Alterations of normal eukaryotic genetic regulatory mechanisms resulting from the transformed (cancerous) state also are discussed. Lecture and lab. Offered every year.

COURSE LEARNING OUTCOMES

Students will be able to:

1. Understand and apply how the molecular structure of nucleic acids and proteins dictate function, the mechanism of each process that allows for genes to be expressed as proteins, and regulation of the Central Dogma.
2. Perturb any of the above processes, and correctly predict the outcome.
3. Identify the major components of molecular biology and their importance in understanding our genetic makeup.
4. Understand and explain the major biochemical and molecular processes occurring within a cell (involving DNA, RNA, proteins, and peptides) and their interaction with each other.
5. Comprehend, critically evaluate, and present current research from the primary literature in the topics of molecular biology and genetics.

6. Utilize self-learning techniques to help themselves and others understand how to obtain, understand, and apply information about molecular biology and genetics.
7. Identify the importance of molecular biology and techniques in genetics and how they contribute to science in drug discovery, vaccines, treatment, and cures.
8. Identify and describe an aspect of molecular biology, genetics, and their importance in science

EVALUATION AND GRADING

Your grade for this course will be based on five distinct evaluation tools in class (exams, team based learn activities, weekly assignments, quiz and participation). Each is described in detail below.

CLASS

Exams (400 points) - There will be three midterms and a final exam. Each exam will consist of true/false, multiple choice, and short answer questions. All of science is cumulative such that scientific knowledge must build and expand upon previous knowledge. The same is true when learning science, you must remember and apply all that you have previously learned in order to completely understand and apply newer material. Although the focus of each midterm will be on recent material, each should be thought of as a cumulative exam. The final exam will be semi-cumulative, with about one-third to half of the points coming from the previous chapters and the rest from the most recent chapters.

Exam I (2/8): 100 points

Exam II (3/3): 100 points

Exam III (4/7): 100 points

Final Exam (5/5): 100 points

Team based learning activities (750 points – 4 events) - Team based learning allows students to use and apply course concepts. Application of foundation knowledge is important to all sciences, and is a critical skill for every person regardless of field. We will have four team-based learning events this semester. Each event will consist of an individual pre-quiz, a group version of the same quiz, an additional activity, and a peer evaluation questionnaire. Points will be awarded for the individual quiz, for the group quiz, and for the peer questionnaire. The entire class will set the distribution of these points on the first day.

Individual pre-quizzes = 160 points

Group quizzes = 320 points

Peer evaluation questionnaire = 270 points

Weekly assignments (50 points) – These activities will vary from week to week. They will include pre-announced quizzes, discussion boards, and online submitted worksheets. The easiest way to find these is through Canvas.

Class participation (150 points) - I teach largely by a lecture/discussion style. I hope that everyone will participate in the discussion through asking and answering questions. Your general class participation includes discussion, attentiveness.

Intermittent quiz (160 points- 10x16 weeks) – Once a week quiz, on either MW or F. Short questions from the week’s class. These could either be an in-class quiz, take home quiz or an open book quiz. (Individual pre-quizzes).

Late Policy

0-24 hours late = can achieve up to 75% of possible points; 24-48 hours late = can achieve up to 50% of possible points; and more than 48 hours late = will not be accepted.

Approximate grade breakdown

A	93.33-100%	B	83.34-86.66%	C	73.34-76.66%	D	63.34-66.66%
A-	90-93.33%	B-	80-83.33%	C-	70-73.33%	D-	60-63.33%
B+	86.67-89.99%	C+	76.67-79.99%	D+	66.67-69.99%	F	0-59.99%

STUDENT CONDUCT

Attendance of all lectures is required; intermittent short quiz will be taken weekly to encourage attendance and participation. A total of three *unexcused* absences will be permissible. More than three absences will result in forfeiture of two percentage points per absence from your final grade unless documentation of a valid excuse is provided (see below). **Three weeks of absences (9 lectures) will result in de-enrollment from the course, according to university policy.** Missed in-class assignments/quiz cannot be made up without prior instructor approval or documentation of a legitimate excuse. Since we meet for 65 minutes each period, arriving late or leaving early is considered ½ absence.

Respect for one another and for the instructor is essential for an effective classroom environment. You are expected to show respect to your classmates and instructors by:

- listening when others are speaking,
- refraining from discussing non-related issues during class,
- do not belittle the opinions of others, even when you disagree.

Behavior intended to embarrass or ridicule others will not be tolerated and will have serious consequences.

Academic honesty: Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. As explained in the university catalog, 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. Violations of university academic honesty include cheating, plagiarism, falsification, aiding the academic dishonesty of others, or malicious misuse of university resources. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for a) that particular assignment or examination, and/or b) the course following the procedure in the university catalog. Students may appeal also using the procedure in the university catalog. See [Academic Policies](#) for further 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. In particular, all homeworks, assignments, and laboratories are owned by Dr. Goodluck and may not be shared with other individuals or groups outside of the students registered for this section. It is a violation of copyright law to otherwise distribute these materials in any form.

Cell phones must be silenced before class begins, and use during class not permissible unless specifically directed to do so. Points may be deducted from your grade for in class cell phone use.

Excused absences are those that result from situations beyond the control of the student. These include (but are not limited to) personal illness, serious family illness or death, and sanctioned University events (athletics, debate team, etc.). Excused absences require some formal documentation such as a doctor's note, email from a coach, etc. Work done on a day for which you have an excused absence can be made up in a reasonable amount of time at the instructor's discretion.

Unexcused absences are those that are preventable by the student or are recreational in nature. These include (but are not limited to) oversleeping, forgetting to come to class, attending family functions (weddings, family trips, etc.), and personal leave days. Work performed on days for which you have an unexcused absence cannot be made up and points are forfeited.

ACADEMIC ACCOMMODATIONS

While all students are expected to meet the minimum academic standards for completion of this course as established by the instructor, students with disabilities may request academic accommodations. At Point Loma Nazarene University, students must request that academic accommodations by filing documentation with the [Education Access Center](#). Once the student files documentation, the Disability Resource Center will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. See [Academic Policies](#) in the (undergrad/graduate as appropriate) academic catalog.

FERPA POLICY

In compliance with federal law, neither PLNU student ID nor social security number should be used in publicly posted grades or returned sets of assignments without student written permission. Also in compliance with FERPA, you will be the only person given information about your progress in this class unless you have designated others to receive it in the "Information Release" section of the student portal. See [Policy Statements](#) in the (undergrad/ graduate as appropriate) academic catalog.

FINAL EXAM POLICY

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

STRATEGIES FOR SUCCESS

Cumulative Knowledge. Biology courses usually "build up" so that a concept you learn early on in the course will be used repeatedly during the semester, and will be required to understand subsequent concepts.

I'm here to help you learn. If you get stuck or have any questions on a particular topic or assignment, come to office hours, or make an appointment to see me.

Know your notes. Come to class and take good notes. Borrowed notes never make as much sense. Review, re-write or re-organize your notes while they are still fresh in your mind.

Do not be afraid to ask questions during lecture. Questions are a positive sign of involvement in the course. If you are confused, there are probably other students who feel the same way.

Do not fall behind. Budget a minimum of two hours of studying time between each lecture. Biology and Chemistry are like languages unto themselves - regular practice is essential.

Pay attention to detail. Pay close attention to any scientific terms that we cover in lecture. You will be expected to know and use those terms correctly. I also suggest paying close attention to the details. The "Big Concepts," are important, but the details can be critical.

What's Important? The more time I spend on a particular topic in class, the more likely that same topic will appear on your exams, and at a similar level of detail. If we cover it in class or in the reading, you can consider it fair game for the exam.