



BIO6062 – Genetics and Molecular Biology (3 units)

Summer 2026

Lecture: Mondays, 6:00–7:30 PM via Zoom | May 18 – June 26 & July 27 – August 7

Lab: Mondays & Wednesdays, 6:00–9:00 PM (In Person) | June 29 – July 23

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

Molecular biology and genetics provide an understanding of the molecular basis of life—specifically, how molecules such as DNA, RNA, proteins, macromolecules, antibodies, and peptides interact with one another. This course examines biochemical and molecular processes within the cell and their significance in science.

The course is divided into two components: labs and lectures. Lab sessions focus on hands-on molecular biology techniques; lecture sessions cover the principles and mechanisms behind those techniques and their importance in the field.

Course Learning Outcomes Students who complete this course will be able to:

1. Identify the major components of molecular biology and genetics and explain their importance in understanding the human genome.
2. Describe the major biochemical and molecular processes occurring within a cell—involving DNA, RNA, proteins, and peptides—and their interactions.
3. Perform and interpret hands-on molecular biology techniques applicable to research and industry.
4. Critically evaluate and present current research from primary literature in molecular biology and genetics.
5. Apply self-directed learning strategies to independently acquire and communicate information in the field.
6. Explain the role of molecular biology and genetics in drug discovery, vaccine development, and disease treatment.
7. Describe the molecular mechanisms underlying current disease detection and treatment approaches.
8. Articulate the broader significance of a specific topic in molecular biology or genetics.



Instructor

Instructor	Corinne McCoy
Email	cmccoy1@pointloma.edu
Course Website	BIO6062-1 SU26 on Canvas (login with PLNU credentials)

Office Hours

The most reliable way to reach me is by email at cmccoy1@pointloma.edu—I check it frequently, though I may be slower to respond on weekends. Live office hours are held via Zoom on:

Wednesdays, 12:00–1:00 PM

Zoom link: <https://pointloma.zoom.us/j/96968033782?pwd=b6PBbtsi0LGwqtP7zxbkVsQTB6zMLF.1>

Meeting ID: 969 6803 3782 | Passcode: 868609

I am available during office hours to help with course material, answer questions about your educational path, or discuss resources at PLNU. If you cannot make my scheduled hours, please reach out so we can arrange an alternative time.

Inclusion Statement

I am committed to creating a learning environment that supports diversity of thought, perspective, experience, and identity. Professional courtesy and sensitivity are especially important when engaging with topics and individuals related to differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationality.

Class rosters include students' legal names. I will gladly address you by an alternate name or pronoun—please let me know early in the semester so I can update my records. My goal is for this course to be a supportive community where honest dialogue, active listening, and mutual respect make for a rich learning environment.

Course Credit Hour Information

This class meets the PLNU credit hour policy for a 3-unit course delivered over 12 weeks. Details about how credit hour requirements are fulfilled are available upon request.

Course Expectations

What I expect of you	What you can expect of me
Be informed. Read this syllabus carefully so you understand the course structure and expectations.	Enthusiasm. I will come prepared and bring genuine enthusiasm to every lecture, lab, and office hours meeting.

Stay current. Keep up with readings and lab assignments—each builds on the last.	Responsiveness. I will reply to emails within 24 hours (weekend and travel responses may take longer).
Act ethically. Maintain a positive attitude and uphold honest, ethical principles toward me, your classmates, and your coursework.	Timely feedback. I will return graded work within one week of the submission date and post solutions promptly afterward.
Integrity. Bring honesty, fairness, and respect to all academic work and collaboration.	Integrity. I will uphold academic integrity and foster an environment of active learning, creativity, and honest collaboration.
Be flexible. Unexpected circumstances may occasionally require last-minute rescheduling.	Reasonable accommodation. I will be understanding of student circumstances, though any exceptions will be available equally to everyone.

Course Materials and Tools

Textbook (Optional): Essentials of Genetics, 10th Edition. Problem sets, lecture content, discussions, and exams will draw primarily from material presented in class.

Canvas: All course materials—assignments, quizzes, readings, lecture slides, lab handouts, and the calendar—are posted on Canvas. Log in with your PLNU Active Directory credentials at <https://ole.sandiego.edu>.

Course Format

This is a hybrid course. The first phase consists of remote lectures via Zoom (Weeks 1–6), which provide the conceptual foundation for the lab work. This is followed by an intensive in-person laboratory component (Weeks 7–10), and concludes with remote lectures again (Weeks 11–12). Students should plan accordingly, as the in-person lab phase requires attendance in the San Diego area.

Lab Structure. There are four major laboratory exercises, each spanning roughly two weeks. Students will work in groups of 2–3. While tasks may be divided, all group members are expected to be actively engaged—working at minimum in pairs at all times—to reduce errors and ensure quality results. Lab handouts with background information and detailed procedures will be posted on Canvas prior to each lab.

Lab Reports. At the conclusion of each lab unit, each student submits an individual lab report. Reports should include a brief introduction, your methods (summarized—not copied from the handout), results with data/figures, and a discussion interpreting your findings. Specific formatting requirements for each report will be provided on Canvas.



Peer Evaluation. At designated points during the semester, you will complete a brief evaluation of your own contributions and those of your group members. These evaluations are used to ensure equitable participation and may factor into participation grades. Specific prompts will be provided on Canvas.

Grading

Grade Components

Component	Points Each	Total
Interactive Assignments (5)	20	100
Research Assignments (4)	30	120
Lab Participation (8 labs)	10	80
Lab Reports (8 labs)	50	400
Final Exam	—	50
TOTAL		750

Grading Scale

A+ 98–100%	B+ 88–<90%	C+ 78–<80%	D 60–<70%
A 92–<98%	B 82–<88%	C 72–<78%	F 0–<60%
A– 90–<92%	B– 80–<82%	C– 70–<72%	Grades will not be curved

This course is graded on an absolute scale—not a curve. You are responsible for every point you earn. You are encouraged to collaborate on assignments and bring questions to office hours.

Attendance and Participation

Attendance and active participation are required in both lecture and lab. Lecture content is essential for succeeding in labs, and lab attendance is necessary to complete the required work. If you need to miss a class, contact me as soon as possible.

Per PLNU policy, students absent for more than 10% of class sessions will receive a written warning of de-enrollment. Absences exceeding 20% may result in de-enrollment without notice (prior to the withdrawal deadline) or an “F” grade (after the deadline).

Late or Missing Assignments

Please adhere to all posted deadlines. If you anticipate difficulty meeting a deadline, contact me as soon as possible—ideally before the due date. Unexcused late or missing work will receive a zero.

Course Schedule

Review this schedule regularly to ensure deadlines are met. Lecture sessions are held on Mondays (remote via Zoom). Lab sessions are held Monday/Wednesday in-person during Weeks 7–10 only.

Week		Lecture Topic	Assignment, Activities, Due Dates
1	5/18	Mitosis/Meiosis	
2	5/25	Mendelian genetics	Bio-Interactive #1 Due
3	6/1	Pedigrees, Chi Squared Test	Bio-Interactive #2 Due
4	6/8	Modification of Mendelian Ratios Epistasis, Complementation, Pleiotropy	Bio-Interactive #3 Due
5	6/15	3-point mapping; recombination and linkage	Bio-Interactive #4 Due
6	6/22	Bacterial Genetics; Regulation of gene expression	Bio-Interactive #5 Due
TRANSITION TO IN PERSON LAB SECTIONS NEXT WEEK			
7	6/29	Genotyping: PCR, Restriction Digest, Gel Electrophoresis	
	7/1	Chi Squared with Yeast Genetics	Research Assignment #1 Due
8	7/6	Bacterial Cloning, Plasmid Prepping, Transformations into E. coli, Plasmid Mapping	
	7/8	Immunofluorescence	Research Assignment #2 Due
9	7/13	Human PTC Tasting	
	7/15	DNA extraction of strawberry and cheek cells	Research Assignment #3 Due
10	7/20	Western Blotting, Quantitative Biology	
	7/22	Growing yeast, micro pipetting, serial dilutions, using spectrophotometry	Research Assignment #4 Due
TRANSITION BACK TO REMOTE LECTURE SECTIONS NEXT WEEK			

11	7/27	Epigenetics and Cancer Genetics	
12	8/3	Final Exam	

Academic Integrity

All students are expected to submit work that is entirely their own. Academic dishonesty includes: sharing or receiving exam answers; copying text verbatim from a source without proper quotation and citation; and submitting work that is substantially identical to a classmate's ("working together" does not justify identical responses).

If you are unsure whether something constitutes dishonesty, ask me before submitting. Violations will be taken seriously and handled in accordance with PLNU's academic honesty policy, which may include a failing grade on the assignment, a failing grade for the course, or further disciplinary action.

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.

Artificial Intelligence (AI) Policy

You may use AI tools (e.g., ChatGPT, Gemini, Perplexity, GrammarlyGo) to help brainstorm or generate initial ideas. However, you may not use AI tools to generate any content—text, images, audio, or video—that you submit for a grade.

What this means in practice: Using AI to outline an idea and then writing your response entirely in your own words is acceptable. Submitting AI-generated text, even if edited, is not. If you are uncertain whether a particular use is permitted, ask me before submitting.

PLNU Policies

Copyright

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.

Recording Notification



This course may be recorded by the instructor for educational purposes. Recordings are accessible only to enrolled students and authorized personnel and are subject to copyright protection. Unauthorized distribution is strictly prohibited.

Academic Honesty

Students should demonstrate academic honesty by doing original work and giving appropriate credit to others' ideas. A faculty member who detects academic dishonesty may assign a failing grade for the assignment or exam, or—depending on severity—for the course. See the University Catalog for appeal procedures and full policy definitions.

Academic Accommodations

PLNU is committed to equal access for all students. Those with disabilities may request accommodations through the Educational Access Center (EAC), located in the Bond Academic Center.

- Email: EAC@pointloma.edu | Phone: 619-849-2533
- Contact the EAC as early as possible—ideally before the semester begins. Accommodations are not retroactive.
- Once eligibility is determined, the EAC will create an Accommodation Plan (AP) visible to your professors through Accommodate.
- PLNU strongly encourages students to discuss their AP with instructors during the first two weeks of the term.

Language and Belonging

PLNU faculty are committed to equitable, inclusive, and bias-free language as the standard for university-level work, consistent with MLA, APA, and Chicago style guidelines. Good academic writing avoids unsubstantiated generalizations about personal characteristics such as age, disability, class, ethnicity, gender, race, religion, or sexual orientation. If you or someone you know has experienced discrimination, resources and reporting options are available at www.pointloma.edu/nondiscrimination.

Attendance Policy (PLNU)

Regular and punctual attendance is essential to academic achievement and is a minimal requirement for all courses. Absences are counted from the first official class meeting, regardless of enrollment date. Students anticipating a full week of absence must contact the instructor in advance to arrange make-up work at the instructor's discretion.

Technology Requirements

To participate in this hybrid course, students must meet PLNU's minimum technology requirements, including a computer with a working webcam, microphone, and speakers or headphones. Tablets are not compatible with proctored online exams. Technology issues do not excuse missed assignments or participation.