



Department of Biology
BIO2010L 1A, 1B, 2A and 2B Cell Biology and Biochemistry Lab
Lab (1 unit)
Fall 2024

Meeting days/times:

- Section 1A: MON 2:45 – 5:45 pm (Pittman)
- Section 1B: THURS 8:00 – 11:00 am (Niethammer)
- Section 2A: TUES 8:00 – 11:00 am (Niethammer)
- Section 2B: TUES 1:30 – 4:30 pm (Niethammer)

Meeting location: Sator Hall Lab 120

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| Instructor title and name: | Professor Niethammer and Professor Pittman |
| Email: | jnietham@pointloma.edu and spittman@pointloma.edu |

PLNU Mission

To Teach ~ To Shape ~ To Send

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

An inquiry-based laboratory that is a co-requisite for BIO2010.

Program and Course Learning Outcomes

The labs are intended to help bring everyone up to the same level so that each person can:

1. Perform various lab techniques that are standard in biology and that will be required to perform many of the labs later in the biology degree.
2. Design experiments based on the scientific method using appropriate controls.
3. Produce written lab reports that effectively convey experimental purposes, methods, results (including data graphs and tables), and conclusions.
4. You will design, analyze and summarize an experiment which will be considered your foundational explorations signature assignment.

Required Texts

The lab handouts can be printed and downloaded from CANVAS. You must bring your printed lab each week to your lab section.

You must attend the section in which you are registered. Extenuating circumstances requiring individuals to come to a different lab section on any given week will be considered if brought forward to the instructor well in advance.

Assessment and Grading

Assessment: The student's grade in lab, which is combined with his lecture grade to create a single overall grade for the course, will be primarily based on the following criteria: (1) lab quizzes, (2) lab reports, (3) lab questions, (4) a lab practical exam, (5) participation and attendance and (6) bioethics assignments. Each is described briefly below.

Lab quizzes: For most weeks students should expect a 5-point quiz at the beginning of lab covering the assigned reading or the previous week's work.

Lab reports: For some of the labs, you will be required to turn in a formal written lab report. These reports will include an introduction, detailed materials and methods, results, and a discussion. More information on how to write a lab report can be found in the lab manual, and in the detailed instructions on CANVAS.

Lab questions: Each lab comes with a set of questions. These, along with any supplemental questions or data assigned by the instructor **will be turned in by the end of the lab**. *All late work is deducted 10% per day it is late, up to seven days late.*

Lab practical exam: At the end of the lab course, students will be given a lab practical. Some questions will require hands-on work while others will be thought questions regarding topics discussed and read during the course of the semester in lab. **You are allowed to maintain a lab notebook with protocols, notes, hints, etc. that you will be able to use on the lab practical.** However, you may only use your own notes incorporated into a lab manual, not your friend's notes or notes taken during studying just prior to the practical.

Participation and attendance: ~35 points of your lab grade will be based on participation in the lab. There are a total of ~ 9 labs. As a rule of thumb, you will be awarded ~ 2pts per lab, which is the culmination of your attendance (1 pt) your punctuality (1 pt) and your participation (1 pt). We want to ensure that everyone is participating and pulling their share of the load during lab activities. If there are any issues, I will discuss this with your lab partners and assign or reduce points as appropriate. You cannot learn in a lab setting without participating to the fullest. You will also do very poorly on the lab practical if you are not immersed in the lab activities each week. Based upon PLNU's attendance policy (see below), if your absences exceed 20% the student may be de-enrolled.

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.

Bioethics: 20 points of your lab grade will be based on two bioethics assignments (10 points each). We will discuss bioethical issues which include individual rights versus the public good, falsification of data, and informed consent.

Point breakdown

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| Lab quizzes (9 x 5 pts, with lowest score dropped) | 40 points |
| Unit questions and lab reports | 125 points |
| Lab practical (1 x 55 pt) (5 bonus points) | 50 points |
| Lab participation and attitude | 35 points |
| Bioethics | 20 points |
| TOTAL | 270 points possible |

Laboratory attire and safety: Although we will not be working with anything particularly dangerous or sensitive in this course, it is always a good idea to learn and practice strong lab safety procedures. Even the least dangerous chemicals, cells, or other biological/chemical components can cause problems when not used safely or properly. Also, we will be sharing a lab with other classes that do use bacteria and other aspects of biology which cause a more direct safety concern. **Thus, safety procedures and attire for BIO2010 labs will be as follows:**

- 1) No open toe shoes (such as sandals) in the lab.
- 2) No food or drink in the lab. Please use the cubicles just inside the lab where you can set your water bottles.

I reserve the right to take off up to 20% from each lab in which you do not follow the above rules regarding attire and food/drink. Other rules and safety requirements such as lab coats, goggles, and gloves will be discussed and followed as appropriate for each individual lab.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor 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 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. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

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 (EAC@pointloma.edu or 619-849-2486). 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 allowed accommodations. The EAC makes accommodations available to professors at the student's request. 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. Accommodations are not retroactive so 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 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. 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 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 special accommodations.

| DATE | LAB |
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| WEEK 1 September 3-6 | NO LAB |
| WEEK 2 September 9-13 | LAB 1 - Common Experimental Techniques |
| WEEK 3 September 16-20 | LAB 2 - Process of Scientific Inquiry: Scientific Method |
| WEEK 4 September 23-27 | LAB 3 - Microscopy (Mini-Lab) |
| WEEK 5 September 30 – October 4 | LAB 4 - Enzymes and Denaturation (I) |
| WEEK 6 October 7-11 | LAB 4 (continued) Enzymes and Denaturation (II) <i>Lab Report due by October 12, 2024</i> |
| WEEK 7 October 14-18 | LAB 5 Cellular Respiration in Plants + Fish – Part I |
| WEEK 8 October 21 – 25 | NO LAB FALL BREAK (OCT 24-25) |
| WEEK 9 October 28 – November 1 | LAB 5 (cont.) Cellular Respiration in Plants + Fish – Part II <i>Lab Report due by November 2, 2024</i> |
| WEEK 10 November 4-8 | LAB 6 - Bacterial Conjugation (I) |
| WEEK 11 November 11-15 | LAB 6 (cont.) Bacterial Conjugation (II) |
| WEEK 12 November 18-22 | Bioethics I (Mini-Lab) |
| WEEK 13 November 25-29 | NO LAB <i>Thanksgiving Break</i> |
| WEEK 14 December 2-6 | Lab Practical |
| WEEK 15 December 9-13 | Bioethics II (Mini-Lab) |