



BIO 6065: Physiology of Plants & Animals

Biology Department

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Summer 2026

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.

Course description:

This course focuses on concepts related to the physiological mechanisms that contribute to homeostasis in both plants and animals. Lecture and lab, 3 units

Additional information – In order to provide examples of the incredible breadth of physiological solutions that eukaryotic organisms have to address life's challenges, some fungi and protist examples will also be included.

Course learning outcomes:

1. Discuss major concepts and theories relevant in the study of physiology including the concept of homeostasis and the relationship between structure and function.
2. Articulate persistent challenges faced by physiologists.
3. Perform, and demonstrate an understanding of, experimental methods and data analysis used in the study of physiology.
4. Analyze representative research papers in physiology.
5. Explain the structure and function of plants and animals in terms of the adaptation of common body plans to diverse environmental challenges.
6. Analyze the common and divergent ways that animals, protists, fungi and plants solve the physiological problems of detecting/responding to stimuli, obtaining energy and nutrients, circulating/transporting materials, and reproducing/developing.
7. Relate the properties of macromolecules and the cells containing them to the function of tissues, organs and organ systems.
8. Explain how knowledge of unique organismal adaptations can inspire solutions to challenging human problems (bioinspiration) on a molecular, cellular, and organismal level.

Instructors and contact information:

Please contact us with questions – we are happy to set up an appointment!

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Recommended Text:

A biology majors'-level textbook such as Brooker, Widmaier, Graham & Stiling. (2021 edition) ***Principles of Biology***, 3rd edition. McGraw-Hill. ISBN 9781260708325

Required books:

1. Chamovitz, Daniel (2017 edition). ***What a Plant Knows: A Field Guide to the Senses***. Scientific American: New York, New York. (Referred to as "WAPK" in the schedule)
2. Catania, Kenneth. (2020). ***Great Adaptations: Star-Nosed Moles, Electric Eels, and Other Tales of Evolution's Mysteries Solved***. Princeton University Press

All other required reading (or links to them) will be posted on Canvas

Class sessions and attendance:

Class will meet via zoom every Tuesday evening from the week of May 18 through the week of June 22. The next 4 weeks, class will meet in-person for labs from 6-9 PM in Rohr Science 40. Finally, the last two weeks of class will return to weekly zoom sessions on Tuesdays. Class attendance will be kept, and the school's policy will be enforced as outlined in the university catalog. Since the class only meets 16 times, missing more than one class period may impact the final grade. Students missing 3 sessions may be dropped.

Last day to add the course: May 25, 2026

Last day to drop the course: July 20, 2026

Assessment:

Research paper analyses: 6 @ 20 points each	120 points
Lab summaries: 8 @ 20 points each	160 points
Exams: 2 @ 100 points each	200 points
Presentation	100 points
Participation in lab work, online discussions, etc.	80 points
Smaller in-class assignments	approx. 80 points
	740 points

Grading scale

A 90% B 80% C 70% D 60% F 50%

Final course grades will be recorded with – added to the lowest 2% and + added to the highest 2% within each range. For example, 91% = A- and 88% = B+

In graduate courses, grades of both A and B are perfectly acceptable; students will earn grades based on the quality of the assignments submitted, not on the amount of effort put into the assignment.

Incompletes and Late Assignments

All assignments are to be submitted when they are due—including assignments posted in Canvas. Late assignments will be penalized 20% for being up to 24 hours late. Incompletes will only be assigned in extremely unusual circumstances.

Research paper analyses

Summaries of research papers focusing on the claims, evidence and justification in each paper will be required throughout the course. These analyses serve as practice for students completing the non-

thesis option, since article analysis is a major focus of the comprehensive exam at the completion of the program, as well as for those completing the thesis option since preparation of the literature review requires this type of work.

Lab summaries (summaries or results & conclusions)

Lab summaries may focus on a summary of the lab work, and a discussion of the results (including appropriate drawings, graphs and/or tables), an analysis of the data, and a clear conclusion/claim with clear justification of how the data presented supports the claim.

Exams

Exams are open book/open internet and will require integration of course content to demonstrate understanding. While working and studying in groups is encouraged during the week, each take-home exam must represent each person's own work. All concerns or requests for clarity regarding the test questions themselves MUST be directed to the instructors, not to other students. Late exams will be penalized 20% for being up to 24 hours late. No exams will be accepted after that time unless arrangements have been made prior to the exam date.

Presentations

Students will each choose an appropriate topic for a 6-8-minute presentation on the last day of the class. Each presentation must ask and answer a specific question. Following the presentation, the presenter will field questions from other class members and/or professors for approximately 5 minutes. Questions must be cleared by professors to ensure that they are specific enough and also to make sure that there is a diversity of topics. Each presentation must be supported by four research articles, and an explanation of 2 data tables/graphs from an original research article must be a central component of the presentation.

Options for the presentations:

1. Prepare a presentation on the comparison between the physiological mechanisms used by two types of plants, two types of animals, or a plant and an animal in response to a challenge.
2. Prepare a presentation on the molecular basis of a physiologic response to a specific hormone in plants or animals.
3. Propose a physiology-related presentation of a different type.

BIO 6065 schedule – Summer 2026 (details on Canvas, schedule subject to change)

WK	Date	Topic
1	May 19 ZOOM	Intro to course Human Physiology – Reproducing & developing Human Physiology – Detecting & responding to stimuli Grand Challenges article
2	May 26 ZOOM	Human Physiology - Obtaining nutrition and transporting materials Research article analysis #1
3	June 2 ZOOM	Animal, Protist & Fungal Physiology – Reproducing & developing Animal, Protist & Fungal Physiology – Detecting & responding to stimuli Research article analysis #2
4	June 9 ZOOM	Animal, Protist & Fungal Physiology – Obtaining nutrition and transporting materials Research article analysis #3
5	June 16 ZOOM	Plant Physiology – Reproducing & developing Plant Physiology – Detecting & responding to stimuli Research article analysis #4
6	June 23 ZOOM	Plant Physiology –Obtaining nutrition and transporting materials Exam #1
7A	June 30 In-person lab	Lab #1 - Human Physiology Research article analysis #5
7B	July 2 In-person lab	Lab #2 - Human Physiology Presentations Research article analysis #6
8A	July 7 In-person lab	Lab #3 – Animal Physiology Presentations Great Adaptations reading summary #1
8B	July 9 In-person lab	Lab #4 – Animal Physiology – FIELD TRIP Great Adaptations reading summary #2
9A	July 14 In-person lab	Lab #5 – Plant Physiology Presentations Great Adaptations reading summary #3
9B	July 16 In-person lab	Lab #6 – Plant Physiology Presentations WAPK reading summary #1
10A	July 21 In-person lab	Lab #7 – Plant Physiology Presentations WAPK reading summary #2
10B	July 23 In-person lab	Lab #8 – Plant Physiology Presentation WAPK reading summary #3
11	July 28 ZOOM	Integration – Common challenges met used a variety of solutions Bioinspiration
12	Aug. 4 ZOOM	Wrap up Exam #2

PLNU General Policies

PLNU Spiritual Care

PLNU strives to be a place where you grow as a whole person. To this end, we provide resources for our Graduate students to encounter God and grow in their Christian faith. At the Mission Valley (MV) campus we have an onsite chaplain who is available during class break times across the week. If you have questions for or a desire to meet or share any prayer requests with the onsite chaplain, you may email Dr. Sylvia Cortez Masyuk at scortezm@pointloma.edu.

In addition, on the MV campus there is a prayer chapel on the third floor. It is open for use as a space set apart for quiet reflection and prayer.

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 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 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 [Graduate Academic and General Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

During the first week of class, you will be asked to submit an Academic Honesty Verification Statement. Submitting the statement is a requirement of this course. By submitting the Academic Honesty Verification Statement, you will be verifying all assignments completed in this course were completed by you. Carefully review the Academic Honesty Statement below.

Statement: "In submitting this form, I am verifying all the assignments in this course will be completed by me and will be my own work."

Artificial Intelligence (AI) Policy

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, GrammarlyGo, Perplexity, etc.) to generate ideas, but you are not allowed to use AI tools to generate content (text, video, audio, images) that will end up in any work submitted to be graded for this course. If you have any doubts about using AI, please gain permission from the instructor.

[MLA Style Center: Citing Generative AI](#)

[APA Style: How to Cite ChatGPT](#)

[Chicago Manual of Style: Citing Content Developed or Generated by AI](#)

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 619-849-2533). 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 allowed 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 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 accommodations.

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) have experienced other forms of discrimination, you can find more information on reporting and resources at www.pointloma.edu/nondiscrimination.

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 at pointloma.edu/Title-IX. 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 at counselingservices@pointloma.edu or find a list of campus pastors at <http://pointloma.edu/Title-IX> or as shown in the PLNU Spiritual Care section of this syllabus.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

PLNU Course Modality Definitions

1. Online Courses: These are courses with class meetings where all instruction and interaction is fully online.
 - a. Synchronous Courses: At least one class meeting takes place at a designated time.
 - b. Asynchronous Courses: All class meetings are asynchronous.
2. Hybrid Courses: These are courses with class meetings that take place both in the classroom and online synchronously and/or asynchronously.
3. In-Person Courses: These are courses that meet in person with the instructor and students in a physical classroom setting. With approval by the area dean, this may include up to 25% of qualified class interactions through a Learning Management System (such as Canvas).

PLNU Attendance and Participation Policy

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements.

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.

Students who anticipate being absent for an entire week of a course should contact the instructor in advance for approval and make arrangements to complete the required coursework and/or alternative assignments assigned at the discretion of the instructor. Acceptance of late work is at the discretion of the instructor and does not waive attendance requirements.

Refer to [Academic Policies](#) for additional detail.

Synchronous Attendance/Participation Definition

For synchronous courses that have specific scheduled meeting times (including in-person, hybrid, and synchronous online courses), absences are counted from the first official meeting of the class regardless of the date of the student's enrollment. For courses with specific attendance requirements, those requirements are outlined in the course syllabus.

Use of Technology

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements](#) information. Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams requires a computer with a camera (tablets are not compatible) to complete exams online.

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

PLNU Academic Behavior Policy

Both Faculty and students at PLNU 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 PLNU 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, repones procedure and the appeal process, please consult the Academic Behavior Policy in the University Catalog.

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.

GPS Academic Resources

PLNU offers the following free academic resources virtually for Graduate Professional Studies (GPS) Students. Visit myPLNU through the links below for more information.

The GPS Writing Center offers:

- **Zoom Writers Workshops** offered each quad on a variety of helpful topics
- **One-to-one appointments** with the Writing Coach
- **Microlearning YouTube Video Library** for helpful tips anytime
- **Research Help Guide** to help you start your research

The physical office is located on the third floor of the **Mission Valley Regional Center** off the student lounge.

Academic Writing Resources Course: Found on your Canvas Dashboard, this course is non-credit with 24/7 access, no time limits, and self-paced content. **Watch a quick video run-through** and take time now to explore!

Grammarly: Students have unlimited FREE access to Grammarly for Education, a trusted tool designed to help enhance writing skills by providing real-time feedback, identifying areas for improvement, and providing suggestions. Grammarly's Generative AI is NOT available with our student accounts.

Tutoring: Students have access to 24/7 live or scheduled subject tutoring through Tutor.com, including a Paper Drop-Off Service with feedback within 12 hours.

We are here to support you! Contact us anytime: **GPSWritingCenter@pointloma.edu**