

**BIO 6065: Physiology of Plants & Animals**

**Biology Department**

**Dr. Dianne Anderson & Dr. Yoojin Choi**

**Summer 2024 Quad II**

**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

**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 and plants solve the physiological problems of detecting/responding to stimuli, obtaining energy and nutrients, circulating/transporting materials, removing wastes, and reproducing/developing.
7. Relate the properties of macromolecules and the cells containing them to the function of tissues, organs and organ systems.

**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 on Mondays and Wednesdays from 6-9 PM in Rohr Science 40 or on zoom. Class attendance will be kept and the school's policy will be enforced as outlined in the university catalog. Since the class only meets 15 times, missing more than one class period will impact the final grade. Students missing 3 sessions will be dropped.

Last day to add the course: July 7, 2024

Last day to drop the course: July 7, 2024

***Assessment:***

Research paper analyses: 4 @ 20 points each (individuals)	120 points
Lab summaries: 12 @ 20 points each (pairs)	240 points
Exams: 2 @ 150 points each (individuals)	300 points
Presentation	100 points
Participation in lab work, online discussions, etc.	50 points
<u>Smaller in-class assignments</u>	<u>approx. 40 points</u>
	850 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.

***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 (results & conclusions)***

Lab summaries will focus on a presentation of the results (including appropriate drawing, graphs and 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 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**  
**(details on Canvas, schedule subject to change)**

WK	Date	Topic
1	7/1	Intro to course & Plant Diversity
2	7/3	Animal Diversity
3	7/8	Reproducing
4	7/10	Developing & Growing
5	7/15	Metabolism & Obtaining Energy/Matter
6	7/17	Metabolism & Obtaining Energy/Matter
7	7/22	Transporting Materials Take home - Exam #1
8	7/24	Transporting Materials
9	7/29	Transporting Materials
10	7/3	Removing Waste
11	8/5	ZOOM - Detecting & Responding to Stimuli (Animals)
12	8/7	Detecting & Responding to Stimuli (Plants)
13	8/12	ZOOM or Field Trip to Birch Aquarium - maybe Monday or Saturday?
14	8/14	Summary of semester
15	8/19	Take home exam - Exam #2
	8/21	Final presentations

## PLNU General Policies

### PLNU Spiritual Care

#### Balboa Campus:

PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our graduate students to encounter God and grow in their Christian faith. At the Balboa campus, we have an onsite chaplain, Rev. Kevin Portillo, who is available during class break times across the week. If you have questions, a desire to meet or share any prayer requests with Rev. Portillo, you may contact him directly at [KevinPortillo@pointloma.edu](mailto:KevinPortillo@pointloma.edu).

#### Liberty Station Campus:

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 Liberty Station campus we have an onsite chaplain, Rev. Dave Hazel, who is available during class break times across the week. If you have questions, a desire to meet or share any prayer requests with Rev. Hazel, you may contact him directly at [dhazel@pointloma.edu](mailto:dhazel@pointloma.edu) or feel free to call or text (913-231-3975).

#### Mission Valley:

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, a desire to meet or share any prayer requests with the onsite chaplain, you may email them at [mcvhaplain@pointloma.edu](mailto:mcvhaplain@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 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 [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**

Use of Artificial Intelligence (AI) tools (e.g., ChatGPT, iA Writer, Marmot, Botowski) may be permitted depending on the assignment. Expectations will be clear for any assignments for which AI use IS allowed. Use of these tools on other assignments will be treated as plagiarism.

### **PLNU Academic Accommodations Policy**

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.

### **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.

You may report an incident(s) using the [Bias Incident Reporting Form](#).

### **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](http://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](mailto:counselingservices@pointloma.edu) or find a list of campus pastors at [pointloma.edu/title-ix](http://pointloma.edu/title-ix).

### **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.

### **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:**
- o **Zoom Writers Workshops** offered each quad on a variety of helpful topics
- o **One-to-one appointments** with the Writing Coach
- o **Microlearning YouTube Video Library** for helpful tips anytime
- o **[Research Help Guide](#)** to help you start your research
- o 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!
- **[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](mailto:GPSWritingCenter@pointloma.edu)**