



Biology Department/School of STEM

BIO6067: Marine Biology

3 Units

Summer 2025

T, 6-9PM; select Saturdays (variable times)

Lecture: Latter 02; Lab: Rohr Science 40

Final Exam: July 2-5, 2025

Table 1. A table with course information

Information	Specifics for the Course
Instructor title and name:	Dr. Walter Cho & Prof. Hayden Huff
Phone:	X2398
Email:	wcho@pointloma.edu , hhuff@pointloma.edu
Office location and hours:	Rohr Science 134, by appointment

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

From the course catalog:

Concepts in marine biology, including the ecology, function, and adaptations of marine organisms, are addressed from the perspective of teaching for conceptual understanding. Lecture and field-oriented lab.

Welcome to BIO6067! In this course we are going to study one of God's amazing creations, the oceans and the organisms within it. This course will provide an overview of the four main disciplines of oceanography: geological, chemical, physical, and biological oceanography. The ocean is a complex environment and we will start the course with an overview of the marine environment, examining the geological context of the oceans, the properties of seawater and the dynamic nature of the marine environment including waves, tides, and currents. We will then discuss specific marine habitats and the organisms that live in them, focusing on the biological adaptations and ecological functions of marine organisms in their specific habitat. This course will involve a combination of lecture, labs/field trips, writing, and a discussion of published literature relevant to the field. Upon completion of this course, you will have a greater understanding of the ocean environment and its inhabitants, as well as a greater appreciation for the beauty and wonder of God's Creation around us.

Program and Course Learning Outcomes

IDEA Center – Course Goals:

- 1) Gaining factual knowledge
 - 2) Learning fundamental principles, generalizations, or theories
 - 3) Learning to apply course material
 - 11) Learning to analyze and critically evaluate ideas, arguments, and points of view
- You will be able to analyze, evaluate, and apply the model of Plate Tectonics to the study of geological features of ocean basins. (1,2,3)
 - You will be able to evaluate the effects of temperature, pressure, and salinity on the density, layering, and dynamics of the oceans. (1,2)
 - You will be able to integrate and evaluate the general circulation of the atmosphere and oceans and describe the origin and effects of waves, tides, and ocean currents. (1,2,3)
 - You will be able to classify marine life based upon distinguishing characteristics and adaptations of multiple categories, including major taxonomic groups, major categories of aquatic life (plankton, nekton, benthos), and major biogeographic and habitat/depth patterns related to the physical characteristics of the ocean. (1,2)
 - You will be able to describe the major marine community types, including their dominant habitat, community structure, and ecological characteristics. (1,2)

- You will be able to discuss current and potential anthropogenic impacts upon marine ecosystems and demonstrate informed judgments about the effects of human activities on the marine environment. (3,11)
- You will discuss major concepts and theories relevant to the study of marine biology. (1,2)
- You will be able to articulate the persistent challenges faced by marine biologists. (11)
- You will demonstrate both an ability to perform, and an understanding of, experimental methods and data analysis used in the study of marine biology. (1, 3)
- You will analyze representative research papers in marine biology. (3, 11)

Required Texts and Recommended Study Resources*

There are no required textbooks for the course. Assigned reading assignments will be provided either in class or on Canvas.

Supplemental reading:

Multiple references that may be helpful have been placed on reserve in the library including:

- Garrison, T. S. (2012) *Oceanography: An Invitation to Marine Science*. 8th Ed. Cengage Learning, Belmont: 640 pp.
- Levinton, J. S. (2014) *Marine biology: function, biodiversity, ecology*. 4th Ed. Oxford University Press, New York: 576 pp.
- Pechenik, J. A. (2010) *Biology of the Invertebrates*. 6th Ed. McGraw-Hill, New York: 606 pp.
- Kardong, K. (2012) *Vertebrates: Comparative Anatomy, Function & Evolution*. 6th Ed. McGraw-Hill, New York: 794 pp.
- Thomas, D.N. (2002) *Seaweeds*. 1st Ed. Smithsonian Institution Press and Natural History Museum, London. 96 pp.
- Dawes, C.J. (1998) *Marine Botany*. 2nd Ed. John Wiley & Sons, New York. 480 pp.

Assessment and Grading

Grades will be based upon a straight percentage of the total possible points available in this course and will include the following requirements:

Approximate Grading Scale:

93-100 = A	90-92 = A-	88-89 = B+	83-87 = B	80-82 = B-	78-79 = C+
73-77 = C	70-72 = C-	68-69 = D+	63-67 = D	60-62 = D-	00-59 = F

Course Requirements:**% Value of Final Grade:****EXAMS:**

Exam #1 25%

Exam #2 25%

LAB/FIELD PARTICIPATION & REPORTS 20%

ASSIGNMENTS 20%

ATTENDANCE/PARTICIPATION 10%

TOTAL 100%

Course Requirements in Detail:**A. Lecture:**

The lectures will follow the tentative “Schedule of Activities” attached to your syllabus. Due to limitation in time, lectures will cover important key concepts but will not cover all of the information important for this course. You will need to read the assigned supplemental reading and complete the assignments to be best prepared for class and to participate in discussions. Keep up with the course material and do not be afraid to ask questions.

B. Exams:

There will be 2 exams (25% final grade each). You are allowed to use any text resources you deem appropriate and your course notes; however, you are expected to work on the exam on your own. Each exam will only cover material since the previous exam; however, fundamental concepts introduced early on will need to be remembered to address concepts throughout the course.

All materials in the class are potential test topics. This includes lectures, assigned reading assignments, lab information, any handouts or additional reading assignments you might receive, and in-class discussions on relevant topics or questions of interest.

C. Lab/Field Participation & Assignments:

The field trips and labs have been designed to expose the students to as many possible different aspects and potential interests of marine science in general and biological oceanography in particular. Because of the opportunity for exciting & significant scientific discovery and observation during these trips, attendance at scheduled lab activities and full completion of lab assignments are mandatory and will constitute 20% of your grade. Absences must be excused ahead of time and unexcused absences for labs will count significantly against this portion of your final grade as lab makeup work will not be accepted when an excused absence is not given/recognized. A good portion of the “laboratory” component of this class

will take place in the field where direct observations of phenomena can be made. Please see the tentative schedule for labs below.

NOTE: The weather may impact what we can do in the field. Expect to get wet and muddy! So wear appropriate clothing and foot wear. Flexibility and adaptability is an important part of marine research and something we all may experience this semester.

D. Assignments:

Assignments will be given throughout the course. These will focus on the reading and lecture materials and are worth 20% of your final grade.

E. Class Attendance/Participation:

Class attendance /participation is a very important part of learning and will count for 10% of your final grade. Be responsible and show up for class.

You are responsible for notifying the instructor of any known excused absence at least one week before the date of that absence.

Content Warning

I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive various types of information. In BIO6067, all of the class content, including that which may be intellectually or emotionally challenging, has been intentionally curated to achieve the learning goals for this course. The decision to include such material is not taken lightly. These topics include evolution, climate change, and environmental stewardship. If you encounter a topic that is intellectually challenging for you, it can manifest in feelings of discomfort and upset. In response, I encourage you to come talk to me or your friends or family about it. Class topics are discussed for the sole purpose of expanding your intellectual engagement in the area of biology, and I will support you throughout your learning in this course.

Trigger Warning

I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive several types of information. In BIO6067, we will cover a variety of topics, some of which you may find triggering. These topics include evolution, climate change, and environmental stewardship. Each time this topic appears in a reading or unit, it is marked on the syllabus. The experience of being triggered versus intellectually challenged are different. The main difference is that an individual must have experienced trauma to experience being triggered, whereas an intellectual challenge has nothing to do with trauma. If you are a trauma survivor and encounter a topic in this class that is triggering for you, you may feel overwhelmed or panicked and find it difficult to concentrate. In response, I encourage you to take the necessary steps for your emotional safety. This may include leaving class while the topic is discussed or talking to a therapist at the Counseling Center. Should you choose to sit out on discussion of a certain topic, know that you are still responsible for the material; but we can discuss if there are other methods for accessing that material and for assessing your learning on

that material. Class topics are discussed for the sole purpose of expanding your intellectual engagement in the area of biology, and I will support you throughout your learning in this course.

Incompletes and Late Assignments

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

Unless otherwise specified, assignments turned in late will be graded as follows: 5% reduction per day up to 3 days late; more than 3 days late = no credit.

PLNU Spiritual Care

Bakersfield 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 Bakersfield campus we have an onsite chaplain, Rev. Brent Kall, 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. Brent Kall, you may contact him directly at bkall@pointloma.edu. Also, there is a weekly Email Newsletter called “The Encourager” that provides a brief devotional and all his contact information.

Balboa 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 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.

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 who is available during class break times across the week. If you have questions, a desire to meet or share any prayer requests with Dr. Sylvia Cortez Masyuk, you may contact her directly at scortezm@pointloma.edu.

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 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.

Artificial Intelligence (AI) Policy

The use of Artificial Intelligence (AI) tools (e.g., ChatGPT, iA Writer, Marmot, Botowski, GrammarlyGo, Perplexity, etc.) is prohibited in this course for any aspect of your work, including idea generation, drafting, editing, or final submissions. This course is designed to assess your independent critical thinking, writing, and research skills without the assistance of AI technologies. Violations of this policy will be treated as breaches of academic integrity.

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 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.

Online Asynchronous Attendance/Participation Definition

Students taking online courses with no specific scheduled meeting times are expected to actively engage throughout each week of the course. Attendance is defined as participating in an academic activity within the online classroom which includes, but is not limited to:

- Engaging in an online discussion
- Submitting an assignment
- Taking an exam
- Participating in online labs
- Initiating contact with faculty member within the learning management system to discuss course content

Note: Logging into the course does not qualify as participation and will not be counted as meeting the attendance requirement.

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**

TENTATIVE COURSE SCHEDULE

Table 2. A table showing the tentative course schedule

DATE	CLASS TOPIC
5/13/2025 (T); 6-9PM	Chemical Oceanography; Ocean Acidification (asynchronous)
5/20/2025 (T); 6-9PM	Marine Geology; Hydrothermal vent communities
5/27/2025 (T); 6-9PM	Physical Oceanography – Atmospheric & Oceanic Circulation; Waves & Tides
5/31/2025 (SAT); 7:30AM-1:30PM	Lab Day 1: Dog Beach Lab, Seawater Properties Lab
6/03/2025 (T); 6-9PM	Benthic Habitats
6/04/2025-6/07/2025	EXAM 1
6/10/2025 (T); 6-9PM	Productivity
6/14/2025 (SAT); 6:30AM-12:30PM	Lab Day 2: Rocky Intertidal Lab; Plankton Tow Lab
6/17/2025 (T); 6-9PM	The Deep Sea
6/24/2025 (T); 6-9PM	Marine organisms I
OPTIONAL 6/28/2025 (SAT); 6:30AM-9:30AM	OPTIONAL Make-up Lab Day
6/28/2025 (SAT); 10AM-4PM	Lab Day 3: Field Survey Lab
7/01/2025 (T); 6-9PM	Marine organisms II
7/02/2025-7/05/2025	EXAM 2