



Biology Department/School of STEM

**BIO3023: Introduction to Oceanography  
Lecture (3) & Lab (1)**

4 Units  
Spring 2025

**LECTURE: BIO3023-1 (MWF 1:30 pm – 2:25 pm)**

**Meeting location (Rohr Science 40)**

**LAB: BIO3023L-1A (W 2:45 pm – 6:15 pm)**

**Meeting location (Rohr Science 40)**

**Final Exam: (Wednesday, 5/07/2025, 1:30 pm – 4:00 pm)**

*“Praise the Lord from the earth, you great sea creatures and all ocean depths,”*

*-Psalms 148:7*

INFORMATION	SPECIFICS FOR THE COURSE
<b>Instructor title and name:</b>	Dr. Walter Cho
<b>Phone:</b>	(619) 849-2398
<b>Email:</b>	<a href="mailto:wcho@pointloma.edu">wcho@pointloma.edu</a>
<b>Office location and hours:</b>	Rohr Science 134; Tues. 9:30 am – 11:30 am & by appointment (Zoom by request) Sign up <a href="#">HERE</a>

**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:

An introduction to the interdisciplinary study of the oceans, including a survey of geological, chemical, physical and biological oceanography. Includes consideration of current research methods and exploration of marine systems. Lecture, lab and fieldwork.

Prerequisite(s): BIO 2011.

Welcome to BIO3023! In this course we are going to study one of God's amazing creations, the oceans. BIO3023 is an introduction to the field of oceanography. The ocean is a complex environment and as such the field of oceanography is interdisciplinary by its very nature. This course will provide an overview of the four main disciplines of oceanography: geological, chemical, physical, and biological oceanography. This course will involve a combination of lecture, labs/field trips, writing, and a discussion of published literature about current events related to the field. Upon completion of this course, you will have a greater understanding of the different physical, chemical, and biological factors that influence the ocean environment and its inhabitants, as well as a greater appreciation for the beauty and wonder of God's Creation around us and your place in it.

### **Program and Course Learning Outcomes**

IDEA Center – Course Goals:

- 1) Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
  - 3) Learning to apply course material (to improve thinking, problem solving, and decisions)
  - 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. (1,3)
  - You will be able to analyze and interpret the origin, distribution, and evolution of ocean sediment. (1,3)
  - You will be able to evaluate the effects of temperature, pressure, and salinity on the density, layering, and dynamics of the oceans. (1)
  - You will be able to integrate and evaluate the general circulation of the atmosphere and oceans. (1)
  - You will be able to analyze and assess the origin and effects of waves, tides, and ocean currents. (1,3)
  - You will be able to classify and analyze the pelagic and benthic environments of the ocean. (1)
  - You will be able to analyze and evaluate the interactions and effects of the biological, physical, and chemical components of the oceans in the context of marine habitats. (1,3)
  - You will be able to discuss ocean policy and analyze it from a scientific and social perspective. (3,11)
  - You will reflect on and articulate your views about the beauty and wonder of God's Creation and your place in it.

## Required Texts and Recommended Study Resources

Garrison, T., & Ellis, R. (2014). Oceanography: an invitation to marine science. 9th Ed. ISBN: 9781305105164

Additional reading and articles as assigned for class discussions and posted on the course site.

## 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	10%
Exam #2	10%
Final Exam	25%
LAB/FIELD PARTICIPATION & REPORTS	25%
QUIZZES/ASSIGNMENTS	20%
ATTENDANCE/PARTICIPATION	10%
<b>TOTAL</b>	<b>100%</b>

## 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 appropriate chapters before the lecture to be best prepared for lecture and to participate in classroom discussions. Keep up with the course material and do not be afraid to ask questions.

### B. Exams:

There will be 2 exams (10% of final grade each) and a Final Exam (25% of final grade). Each exam is objective and can consist of multiple-choice, matching, short answer and true/false type questions. There will also be some application questions including synthesis and analysis of important concepts as well as essay/discussion questions. 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. The Final Exam will be comprehensive, covering topics from the 4th Unit of the course as well as the first 3 Units. Exams may be deployed using the Honorlock system in Canvas.

All materials in the class are potential test topics. This includes lecture materials from the required textbook (text, illustrations), lab information, any handouts or additional reading assignments you might receive, and in-class discussions on relevant topics or questions of interest.

TENTATIVE dates for the exams are: Exam #1 – February 19, 2025 [W]; Exam #2 – April 2, 2025 [W]; FINAL EXAM – May 7, 2025 [W, 1:30 PM–4:00 PM]. Except for the final exam, dates are subject to change depending on progression through required course material.

### **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 reports are mandatory and will constitute 25% 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. Flexibility and adaptability are important parts of marine research and something we all may experience this semester.

### **D. Quizzes/Assignments:**

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

Weekly in-class exercises and select assignments throughout the semester will be graded CREDIT/NO CREDIT. These will be clearly identified when assigned. Credit for these assignments will be awarded only if ALL of the detailed specifications required for the specific assignment are met. Assignments may be resubmitted once through the use of TOKENS (see below).

**TOKENS:** Each student starts the semester with 3 TOKENS, which can be exchanged for either: a) an extension (requests must be submitted BEFORE the assignment is due) or b) a resubmission of a revised assignment (requests for revision must be submitted within 24-hours after the graded assignment has been returned). In order to use a TOKEN, you must both email me and submit a COMMENT on the assignment in Canvas to let me know your intention of using your TOKEN. Your email and COMMENT should: 1) have “Token Request” in the Subject header 2) state whether you are using the TOKEN to request a 24-hour extension or resubmission of an assignment, and 3) name the specific assignment.

### **E. Class Attendance/Participation:**

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

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

### **Final Examination Policy**

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Traditional Undergraduate Records: Final Exam Schedules](#) site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

### **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 BIO3023/BIO3023L, 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 BIO3023/BIO3023L, we will cover a variety of topics, some of which you may find triggering. These topics include issues related to 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 due dates listed on Canvas.

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.

## **Spiritual Care**

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

## **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 online (distance education) outside of California.

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

### **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.

### **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](mailto: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.

### **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 a bias incident regarding language, you can find more information on reporting and resources at [www.pointloma.edu/bias](http://www.pointloma.edu/bias).

### **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).

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](http://www.pointloma.edu/bias)

### **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.

### **Loma Writing Center**

The Loma Writing Center exists to help all members of the PLNU community cultivate transferable writing skills to engage their academic, professional, personal, and spiritual communities. We work toward this goal by conducting one-on-one consultation sessions, supporting writing education across the PLNU community, and participating in ongoing writing center research.

Getting feedback from the Loma Writing Center while you’re in the process of working on an assignment is a great way to improve the quality of your writing and develop as a writer. You are encouraged to talk with a trained writing consultant about getting started on an assignment, organizing your ideas, finding and citing sources, revising, editing for grammar and polishing final drafts, and more. For information about how to make in-person or online appointments, see [Loma Writing Center webpage](#) or visit the Loma Writer Center on the first floor of the Ryan Library, room 221.

- Appointment Calendar: <https://plnu.mywconline.com/>



- Website: <https://www.pointloma.edu/centers-institutes/loma-writing-center>
- Email: [writingcenter@pointloma.edu](mailto:writingcenter@pointloma.edu)

## Important Dates

Last day to add the class	01/17/2025
Last day to drop the class	01/24/2025
Last day to withdraw from the class	03/28/2025
Tentative exam dates	
Exam 1	02/19/2025
Exam 2	04/02/2025
BIO3023-1 Final	05/07/2025, Wednesday, 1:30 pm – 4:00 pm
Holidays	01/20/2025, 03/10-14/2025, 04/17-21/2025

## Lomabooks Instructions for Students:

*This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.*

*You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials.*

*For more information about **LomaBooks**, please go: [HERE](#)*

BIO3023 SP25 Course Schedule

Week	Week of (Mon)	Topic	Lab	Reading (Chapters in Garrison)	Notes
1	Mon, Jan 13, 2025	Introduction; History of Oceanography; Seawater Chemistry	Intertidal Exploration	2, Appendices 4, 5	
2	Mon, Jan 20, 2025	Seawater Chemistry	Seawater Properties	6	01/20/25: No class (Labor Day)
3	Mon, Jan 27, 2025	Seawater Chemistry; Ocean acidification	OOI Data Lab	7, 404-405, 531-532, Suppl. reading	
4	Mon, Feb 3, 2025	Earth's Interior/Plate Tectonics; Ocean Basins	Bathymetry	3, 4	
5	Mon, Feb 10, 2025	Marine Provinces/Benthic Communities	Marine Sediments	482-488, Suppl. reading	2/14/2025: No class (PLNU Presidential Inauguration)
6	Mon, Feb 17, 2025	Marine Provinces/Benthic Communities; Atmospheric Circulation	<b>EXAM 1</b>	482-488, Suppl. reading	1st Exam on Wednesday
7	Mon, Feb 24, 2025	Atmospheric Circulation	Atmospheric Circulation	8 (227-234)	
8	Mon, Mar 3, 2025	Atmospheric Circulation; Ocean Circulation	Ocean Circulation	8, 9	
9	Mon, Mar 10, 2025	<b>Spring Break – No class</b>	<b>Spring Break – No class</b>		<b>Spring Break – No class</b>
10	Mon, Mar 17, 2025	Waves; Tides	Waves	10, 11	
11	Mon, Mar 24, 2025	Waves; Tides	Plankton Tow	10, 11	
12	Mon, Mar 31, 2025	Marine Communities	<b>EXAM 2</b>	Parts of Ch. 16, 17, Suppl. reading	2nd Exam on Wednesday
13	Mon, Apr 7, 2025	Marine Communities; Productivity	Intertidal Field Lab	Parts of Ch. 13, 14	
14	Mon, Apr 14, 2025	Productivity	OOI Data: Primary Productivity	Parts of Ch. 13, 14	Easter Recess – No Class on 4/18/25
15	Mon, Apr 21, 2025	Marine Communities; Resources	OOI Data: Hydrothermal Vent	Parts of Ch. 16, 17, Suppl. reading	Easter Recess – No Class on 4/21/25; 3rd Exam on Friday; iRAT/iRAT
16	Mon, Apr 28, 2025	Marine Communities; Resources	Fisheries	Parts of Ch. 16, 17, Suppl. reading	
17	Mon, May 5, 2025	<b>Finals Week</b>	<b>FINAL: BIO3023-1: 5/07/25, 1:30 pm</b>		<b>FINAL EXAM</b>