



Biology Department

BIO3023: Introduction to Oceanography

3 Units

Fall 2022

*Praise the Lord from the earth, you great sea creatures and all ocean depths,"
– Psalm 148:7*

Meeting days: Lecture: Mon., Wed., Fri. Lab: Tues.	Instructor title and name: Dr. Walter Cho
Meeting times: Lecture: 11AM-12:15PM (PT) Lab: Fri., 2:45PM-6:15PM (PT)	Phone: 619-849-2398
Meeting location: Lecture: Latter 102 Lab: Rohr Science 40	Email: wcho@pointloma.edu
Final Exam: Tues., 12/4/2020, 10:30AM-1PM (PT)	Office location and hours: Rohr Science 134; Zoom link on Canvas: Mon. & Fri., 11AM-1PM; Tues., 9AM-10:30AM (PT); & by appointment
Meeting days: Lecture: Tues. & Thurs. Lab: Fri.	Instructor title and name: Dr. Walter Cho

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. BIO323 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.

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%

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 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 – September 29, 2022 [Th]; Exam #2 – November 10, 2022 [Th]; FINAL EXAM – December 13, 2020 [T, 10:30 AM–1:00 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.

F. Research Paper (for graduate credit)

Graduate students taking this course for credit will require an additional research paper related to course material.

SPIRITUAL CARE

PLNU strives to be a place where students 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 if you have prayer requests, you can contact the [Office of Student 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.

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.

Deadlines will be strictly adhered to. You may request a 24-hour extension through the use of TOKENS (see TOKENS above)

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 [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. 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.

SEXUAL MISCONDUCT AND DISCRIMINATION

Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. 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 help and support 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, it is 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

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 drop date or, after that date, receive the appropriate grade for their work and participation.

TENTATIVE COURSE SCHEDULE (this will most likely change)

Week	Week of	Topic	Chapters in Garrison	Lab	Notes
1	8/28/2022	Introduction/History of Oceanography/Modern Methods	2, Appendices 4, 5	No Lab	
2	9/4/2022	Seawater Chemistry	6	Seawater Properties	9/5/22: No Class (Labor Day)
3	9/11/2022	Seawater Chemistry; Ocean acidification	7, 404-405, 531-532, Suppl. reading	OOI Data Lab	
4	9/18/2022	Earth's Interior/Plate Tectonics; Ocean Basins	3, 4	Bathymetry	
5	9/25/2022	Marine Provinces/Benthic Communities	482-488, Suppl. reading	No Lab	1st Exam – 10/29/22
6	10/02/2022	Marine Provinces/Benthic Communities	482-488, Suppl. reading	Marine Sediments/ Deep-sea Mining Discussion	
7	10/09/2022	Atmospheric Circulation	8 (227-234)	Atmospheric Circulation	
8	10/16/2022	Atmospheric Circulation	8 (234-258)	No Lab	10/14/22: No Class (Fall Break)
9	10/23/2022	Atmospheric Circulation; Ocean Circulation	8, 9	Ocean Circulation	
10	10/30/2022	Ocean Circulation; ENSO, Waves	9, Suppl. reading	Waves	
11	11/06/2022	Waves; Tides	10, 11	Dog Beach [-0'@3:26PM]	2nd Exam – 11/10/22
12	11/13/2022	Productivity	14	Plankton Lab	
13	11/20/2022	Productivity	14, 13.7, 13.8	No Lab	11/23-25/22: No Class (Thanksgiving)
14	11/27/2022	Marine Communities, Resources	16, 17, Suppl. reading	Fisheries Lab	
15	12/04/2022	Marine Communities, Resources	16, 17, Suppl. reading	Intertidal Lab [-0.7'@5:48PM]	
16	12/11/2022	Finals Week			FINAL: 12/13/22,10:30-1PM