

BIO 1005 SYLLABUS

Ecology & Conservation Biology

SPRING 2024



Catalog Course Description: BIO 1005 / 1005L - Ecology and Conservation (4 units)

This GE course is a wide-ranging exploration of major topics in ecological science relating to current issues in conservation biology. Drawing from academic and applied fields, the course examines major concepts in conservation biology and how they impact society, public policy, wise management of natural resources, and ethical choices encountered in everyday life. Focus topics include biodiversity, habitat destruction, exotic species introductions, human harvesting, protected areas, and future prospects. Course approach emphasizes the process of science, critical thinking, active learning, social relevancy, and building connections between case studies and general concepts. An inquiry-based laboratory is a co-requisite.

Instructor: Dr. Mike Mooring
Rohr Science Room 128
Telephone: (619) 849-2719
E-mail: mmooring@pointloma.edu

Office hours:
Make an appointment (office or Zoom)

Teaching Assistants: *Lab Section 1:* Maiah Rivas – mrivas0020@pointloma.edu
Lab Section 2: Ashley Velázquez – avelazqu0021@pointloma.edu

Lecture: Mon-Wed-Fri from 8:30-9:25 AM in **Latter 02** (lower level)

Lab: *Section 1:* Monday 2:45-5:45 PM in **Sator 108**
Section 2: Wednesday 2:45-5:45 PM in **Sator 108**

Equipment: [iClicker2 remote](#) for class participation and quizzes

Required Textbook: *buy used copies from bookstore or online*

[Environmental Science: toward a sustainable future, 12th edition](#), by Richard T. Wright and Dorothy F. Boorse, Pearson, 2013. ISBN-10: 0133102785, ISBN-13: 978-0133102789.

Student Learning Outcomes:

Upon completion of the course, each student will be able to:

- describe how interactions between organisms and their environment influence populations, communities, and ecosystems
- explain strategies for conserving biodiversity and protecting or restoring ecosystems
- articulate and defend a position on environmental stewardship drawing on both biological principles and a Biblical worldview
- design and conduct investigations applying the processes and tools of scientific inquiry (both hypothesis testing and discovery science) to test biological hypotheses
- prepare and analyze graphs drawing valid scientific conclusions

Foundational Explorations Learning Outcomes (FELO): All FE courses are required to assess a FELO. In this course, we will assess FELO 1D: **Critical Thinking** – “Students will be able to examine, critique and synthesize information in order to arrive at reasoned conclusions.” This FELO will be assessed by means of a few questions embedded in the final exam.

Course Credit Hour Information:

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4-unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an estimated 150 total hours meeting the course learning outcomes.

Three scriptural anchors:

God spoke: "Let us make human beings in our image, make them reflecting our nature so they can be responsible for the fish in the sea, the birds in the air, the cattle, and, yes, Earth itself, and every animal that moves on the face of Earth." God created human beings; he created them godlike, reflecting God's nature. He created them male and female. God blessed them: "Prosper! Reproduce! Fill Earth! Take charge! Be responsible for fish in the sea and birds in the air, for every living thing that moves on the face of Earth." Genesis 1: 26-28 (The Message)

The LORD God put the man in the Garden of Eden to take care of it and to look after it. Genesis 2:15 (CEV)

Jesus replied, "You must love the LORD your God with all your heart, all your soul, and all your mind." This is the first and greatest commandment. A second is equally important: 'Love your neighbor as yourself.' The entire law and all the demands of the prophets are based on these two commandments." Matthew 22: 37-40 (NLT)

Central Theme:

“What will it take to move our civilization in the direction of a long-term sustainable relationship with the natural world?”

Course Goal:

Ecology is the study of the interrelationships among living and non-living things in the environment, in other words, how everything is linked to everything else. Conservation biology is the practical science of understanding biodiversity and saving species. One of my primary goals for you is that you will be able to make conceptual linkages among living things and the environment and how these in turn impact biodiversity. My hope is that that this course will help you think critically and work for a better world.

Course Design:

We will meet 3 times a week for a 55-min lecture period in Litter 2, and once a week for a 3-hour mandatory lab period in Sator 108. Every week in class we will do one or more iClicker quizzes on the reading and guided questions from the textbook, in addition to other clicker activities. The material covered in the labs will typically be linked to the current lecture topic but with a different application. Your understanding of the concepts and connections will be assessed through 3 exams (2 midterms and a final), lab assignments, and clicker quizzes.

Readings and Lab Assignments:

You will be responsible for completing the assigned readings from the textbook in a timely manner. Reading questions must be written up and answered individually, by each student. No collaborations on the readings! About twice a week I will assign specific chapter sections along with guided questions. You will submit your answers to the guided questions through Canvas 'Assignments' and they will be graded online. A clicker quiz will be given in class on the due date to make sure you are keeping up. Lab assignments will be submitted online prior to the next lab. An exam study guide will be available to help you prepare for each exam.

Clicker Polling:

I teach by using a combination of lecture and small group activities. To enable participation by everyone in a large class, I require you to have an [iClicker 2 remote](#). The clicker quizzes are used to encourage class participation (being engaged in the class activities) and performance (getting the right answer). The exams will use your iClicker remote in the 'self-paced mode'. If your clicker is not already registered, please [register your remote](#) at the iClicker website so that your participation is recorded.

Late Assignments:

The following penalties will apply for all assignments submitted after the due date. The intent of late penalties is to (1) encourage you to turn in your work on time, and (2) to be fair to those who submit their work on time. However, if you have a legitimate reason for being unable to complete an assignment on time, please communicate that directly to the grader by including a note in the text box when you submit.

- Readings (worth 5 pts): 1 point deducted for each day late (no points after 5 days)
- Labs (usually 20 pts): 2 points deducted for each day late (no points after 10 days)

Attendance and Punctuality:

Regular and punctual attendance is important for optimal achievement and is a requirement for this course. Attendance will be taken with a sign-in list, so it is important for you to be sure to sign in for every class meeting you attend. You are permitted **five (5)** absences (10% of class time) without penalty. Every unexcused absence in excess of 5 will incur a deduction from your attendance participation points. Late arrivals in class are disruptive, therefore please arrive punctually.

Technology Etiquette:

It is obligatory to use your electronic devices responsibly and with respect for others. In this class, it is simply bad manners to be wired to your smartphone or other device instead of being engaged with class activities. Texting and similar activities are a distraction to your fellow students and to me. To ensure the best learning environment possible, **classroom policy is that all electronic devices are turned off and put away out of sight when class is in session.** Stay focused and do not get distracted!

Academic Honesty:

Academic dishonesty is any type of cheating, including plagiarism, fabrication, deception, or impersonation. Plagiarism is the act of presenting information, ideas, or concepts as one's own when in reality they are the result of another person's creativity and effort. With the exception of group assignments with your designated partner, all assignments must be based on your own work. Each assignment must be written in your own words, and no electronic files should be exchanged. Another form of plagiarizing is to copy and paste answers from the reading into your answer, which involves using someone else's words as if they were your own. Much of the learning process involves articulating the answer in your own words, thus bypassing this step will result in an inadequate understanding of the material and will decrease your success on exams or quizzes.

Laptops:

Recent studies have shown that we are currently experiencing an epidemic of 'digital distraction' caused by multi-tasking – moving quickly between tasks on electronic devices in which only partial attention is given to each task. In the classroom setting, studies reveal that the use of laptops for non-course related tasks (e.g., checking emails, social media, browsing) distracts attention from learning and results in reduced academic performance and lowered grades. The reality is that you cannot fully learn new information or master new concepts when distracted by multi-tasking. The evidence indicates that even classmates that see your screen are distracted and their performance reduced. Studies have also shown that students learn better when they have to take notes by hand because they must summarize information in their own words. **I recommend that you do not use your laptops at all during lecture**, and please do not use your laptop for anything incompatible with giving the class your undivided attention. Note that you will be using your laptops in lab sections.

What your grade will be based on:

**Assignment points are approximate and may be adjusted at instructor's discretion*

Attendance Participation	50 pts
Reading questions (22 @ 5 pts)	125 pts
Clicker quiz questions	150 pts
Lab assignments (15 @ 10-20 pts)	255 pts
Team class activities	75 pts
Midterm exams (2 @ 100 pts)	200 pts
Final exam	<u>100 pts</u>
Total	955 pts

Letter Grades:

A	90%	C	70%
A-	88%	C-	68%
B+	86%	D+	66%
B	80%	D	60%
B-	78%	D-	58%
C+	76%	F	< 58%

BIO 1005 LECTURE SCHEDULE - SPRING 2024

	DATE	TOPIC	Wright & Boorse 12e Reading
INTRODUCTION	Jan 8-12	A Sustainable Future	(1) 1.3
	Jan 15	MARTIN LUTHER KING DAY	
ECOSYSTEMS	Jan 17	Trophic Relationships in Ecosystems	(2) 3.1, 5.1
	Jan 19-22	Energy & Matter in Ecosystems	(3) 3.4-3.5, 5.2
POPULATIONS	Jan 24-26	Population Dynamics in the Wild	(4) 4.1-4.2
COMMUNITIES	Jan 29	Community Interactions	(5) 4.3
	Jan 31-Feb 2	Biomes, Disturbance, Succession	(6) 5.3-5.4
HUMANS	Feb 5	Human Population Growth	(7) 8.1-8.4
	Feb 7-16	Dr. M in Costa Rica Lab meets in person, lecture on Canvas	
	Feb 7	Demographic Transition	(8) 9.1
WATER	Feb 9	Hydrologic Cycle	(9) 10.1-10.2
	Feb 12-14	Water Shortages	(10) 10.3-10.4
CLIMATE	Feb 16	Climate Change Introduction	(11) 18.2-18.3
► EXAM 1 →	Feb 19 21	<i>During lab sections in Sator 108</i>	
	Feb 19-21	Climate Change Consequences	(11) 18.2-18.3
	Feb 23	Climate Change Adaptation & Mitigation	(11) 18.2-18.3
SOIL	Feb 26-28	Soil Formation and Soil Loss	(12) 11.1-11.3
AGRICULTURE	Mar 1	Agriculture Introduction	(13) 12.1-12.5
	Mar 4-8	SPRING BREAK	
	Mar 11	Production and Distribution of Food	(13) 12.1-12.5
	Mar 13	Pests and Pest Control	(14) 13.1-13.4
BIODIVERSITY	Mar 15-18	Biodiversity	(15) 6.1-6.4
	Mar 20	Tragedy of the Commons	(16) 7.2-7.3
POLLUTION	Mar 22-27	Water Pollution and Dead Zones	(17) 20.1-20.3
► EXAM 2 →	Mar 25 27	<i>During lab sections in Sator 108</i>	
	Mar 28-Apr 1	EASTER RECESS	
ENERGY	Apr 3-5	Fossil Fuels and Nuclear Energy	(18) 14.2-14.5
	Apr 8-12	Renewable Energy	(19) 16.1-16.6
POLLUTION	Apr 15	Solid Waste: Landfills and Recycling	(20) 21.1-21.3
	Apr 17	Hazardous Chemicals	(21) 22.1-22.5
	Apr 19	Sustainable Business & Natural Capital	(22) 2.1-2.2
ECONOMICS	Apr 22-26	Sustainable Communities & Lifestyles	(22) 23.1-23.3
► FINAL EXAM	May 1	WEDNESDAY 7:30-10:00 AM	

LAB SCHEDULE – SPRING 2024

Section 1: Monday 2:45-5:45 PM – *Teaching Assistant* – Alexandra Bracamonte

Section 2: Wednesday 2:45-5:45 PM – *Teaching Assistant* – Aiyanna Durepo

Bring your laptop computer to all indoor labs | ▲ indicates a field lab

DATE (MON WED)	TOPIC	LAB ACTIVITY
Jan 8 10	Primary Producers	(1) Classic Plant Experiments
Jan 15 17	NO LABS – Martin Luther King Day	
Jan 22 24	Biodiversity	(2) ▲ Sunset Cliffs Tidepools <ul style="list-style-type: none"> ○ Mon 2/22 – Low tide @ 2:00 PM -0.85 ft. ○ Wed 2/24 – Low tide @ 3:06 PM -1.0 ft.
Jan 29 31	Food Webs	(3) Ecosphere Project; Trophic Relations
Feb 7-16	DR. MOORING IN COSTA RICA	
Feb 5 7	Ecosystem Services	(4) Millennium Ecosystem Assessment
Feb 12 14	Climate Change	(5) Meadow Warming Experiment; Marmots and Robins
Feb 19 21	▶ Exam 1	<i>During lab sections in Sator 108</i>
Feb 26 28	Protected Areas	(6) Designing Biodiversity Reserves
Mar 4 6	NO LABS – Spring Break	
Mar 11 13	Plant Biodiversity	(7) ▲ Flex Canyon Native Plants
Mar 18 20	Ecosystem Invaders	(8) Zebra Mussel Invasion
Mar 25 27	▶ Exam 2	<i>Extra Credit Film @ 2:45 Exam @ 3:45</i>
Apr 1 3	NO LABS – Easter Recess	
Apr 8 10	Eutrophication	(9) Dead Zone and Kuparuk River
Apr 15 17	Avian Biodiversity	(10) ▲ Famosa Slough Birds
Apr 22 24	Protected Areas	(11) Wildlife Crossings in Costa Rica
▶ FINAL EXAM	May 1	WEDNESDAY 7:30-10:00 AM



PLNU INSTITUTIONAL POLICIES

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.

ARTIFICIAL INTELLIGENCE (AI) POLICY

You are **ONLY** allowed to use Artificial Intelligence (AI) tools to generate ideas, but you are **NOT** allowed to use AI tools to generate content that will end up in any work submitted to be graded for this course. AI tools (e.g., ChatGPT, iA Writer, Marmot, Botowski) are based on predictive machine learning and not true ‘intelligence’, thus the information it spits out is often inaccurate. If you have any doubts about using AI, please ask the instructor.

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.

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 an “F” grade.

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.

CONTENT WARNING

I acknowledge that each of you comes to PLNU with your own unique life experiences which contribute to the way you perceive various types of information. In BIO1005/1005L (Ecology & Conservation) all of the class content, including that which may be intellectually or emotionally challenging, has been intentionally designed to achieve the learning goals for this course. The decision to include such material is not taken lightly. **These topics include ecological changes, biodiversity loss, climate change, pollution, soil erosion, water loss, alternative energy, and sustainable business and lifestyles.** If you encounter a topic that is intellectually challenging for you, it can manifest in feelings of discomfort and upset. If this occurs, I encourage you to come talk to me or your friends or family about it. Class topics are addressed for the sole purpose of expanding your intellectual engagement in the area of environmental biology and sustainability and I will support you throughout your learning in this course.

TRIGGER WARNING

In BIO1005/1005L (Ecology & Conservation) we will be exploring the themes of **ecological change, biodiversity loss, climate change, pollution, soil erosion, water loss, alternative energy, and sustainable business and lifestyles.** It is possible that these topics and activities may be a trigger for you. 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 vertebrate biology and I will support you throughout your learning in this course.

LANGUAGE AND BELONGING

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As such, it is important that our language be equitable, inclusive, and prejudice free. 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. 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.

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.

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 students 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](#).

Foundational Explorations (formerly GE) Mission: PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

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.

PLNU Final Examination Policy: Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted in this syllabus on the following pages. No requests for early examinations or alternative days will be approved unless you have 3 final exams scheduled on the same day or another compelling reason.



Unless someone like you
Cares a whole awful lot,
Nothing is going to get better.
It's not.

~Dr. Seuss, The Lorax