BIO 1005 SYLLABUS

Ecology & Conservation Biology

SPRING 2021

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
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E-mail: mmooring@pointloma.edu

Office hours:
Make a Zoom appointment

Teaching Assistants: *Lab Section 1*: Kayla Leister – kaylaleister1998@pointloma.edu
Lab Section 2: Timmy Mooring – tbmooring555@pointloma.edu

Lecture: Mon-Wed-Fri from 8:30-9:25 AM in **Hill 4** (outdoor classroom)

Lab: *Section 1:* Tuesday 1:30-4:00 PM in **Sator 108**
Section 2: Wednesday 2:45-5:15 PM in **Sator 108**

Equipment: iClicker REEF Student Web for class participation via laptop / tablet / smartphone

Required Textbook:
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 the outdoor classroom, and once a week for a 1 hour 25-minute lab period face-to-face with online follow-up activities. Every week in class we will do one or more REEF quizzes on the reading and guided questions from the textbook, in addition to other REEF activities. Attending lab is mandatory. 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 midterm exams and a final), lab assignments, and REEF quizzes.

Readings and Lab Assignments:

You will be responsible for completing the assigned readings from the textbook in a timely manner. 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 REEF quiz will be given in class on the due date to make sure you are keeping up. Lab assignments will be submitted online. An exam study guide will be available for each exam with what you are expected to know.

REEF 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 a REEF Polling access. The REEF quizzes are used to encourage class participation (being engaged in the class activities) and performance (getting the right answer).
The exams will be done on Canvas.

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 tell me (by emailing directly) and 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 using REEF, so it is important for you to login to REEF for every class meeting that 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 is disruptive, therefore please arrive punctually.

Electronic Devices:

In order that the class may be accessed online in the event a student is required to quarantine (e.g., positive COVID test, contact tracing), we will be using the Canvas and REEF platforms for all quizzes and exams even though we will be meeting face-to-face in the classroom or lab. This means that you are required to always have your smartphone and laptop/iPad /tablet with you in the outdoor classroom (Hill 4) and indoor lab (Sator 108). Please be in the habit of bringing both devices (let me know if this poses a problem for you). Your laptop/iPad/tablet will be best for partner assignments that will be submitted to Canvas, while your smartphone is convenient for the REEF quizzes. When you arrive in class, you must login to both REEF and Canvas unless otherwise indicated – I will use REEF to take attendance so failure to login to REEF will automatically count you as absent for that meeting. Finally, please DO NOT use your device for non-course activities while class is in session, because such multitasking activity distracts your attention and reduces your learning ability.

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.

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
REEF 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	100 pts
Total	**905 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%

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.

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.

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 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:
While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, which prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in such courses. If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

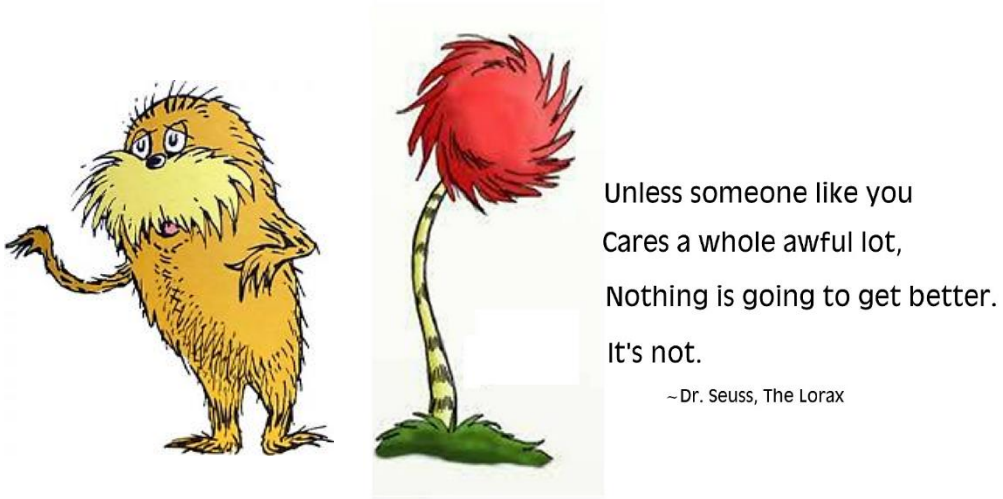
PLNU Attendance and Participation Policy:
Regular and punctual attendance at all synchronous class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (virtual or face-to-face), the faculty member will issue a written warning 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. In some courses, a portion of the credit hour content will be delivered asynchronously and attendance will be determined by submitting the assignments by the posted due dates. See Academic Policies in the Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition:
A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

Use of Technology:
In order to be successful in the online 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 compatible with their computer available to use. If a student is in need of technological resources, please contact student-tech-request@pointloma.edu. Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

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 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.



BIO 1005 LECTURE SCHEDULE - SPRING 2021

	DATE	TOPIC	Wright & Boorse 12e Reading
INTRODUCTION	Mar 1-5	A Sustainable Future	(1) 1.3
ECOSYSTEMS	Mar 8	Trophic Relationships in Ecosystems	(2) 3.1, 5.1
	Mar 10-12	Energy & Matter in Ecosystems	(3) 3.4-3.5, 5.2
POPULATIONS	Mar 15-17	Population Dynamics in the Wild	(4) 4.1-4.2
COMMUNITIES	Mar 19-22	Community Interactions	(5) 4.3
	Mar 24-26	Biomes, Disturbance, Succession	(6) 5.3-5.4
HUMANS	Mar 29	The Human Presence	(7) 8.1-8.4
	Mar 31	Mental Health Day (no class)	
	Apr 2	The Demographic Transition	(8) 9.1
► EXAM 1→	**Apr 5 (Monday)**		
WATER	Apr 7	Hydrologic Cycle and Water Use	(9) 10.1-10.2
	Apr 9	Water Shortages	(10) 10.3-10.4
CLIMATE	Apr 12-16	Climate Change	(11) 18.2-18.3
SOIL	Apr 19-21	Soil Formation and Soil Loss	(12) 11.1-11.3
AGRICULTURE	Apr 23-26	Production and Distribution of Food	(13) 12.1-12.5
	Apr 28	Pests and Pest Control	(14) 13.1-13.4
BIODIVERSITY	Apr 30-May 3	Biodiversity Value, Threats & Solutions	(15) 6.1-6.4
	May 5	Mental Health Day (no class)	
	May 7	Tragedy of the Commons	(16) 7.2-7.3
POLLUTION	May 10-14	Water Pollution and Dead Zones	(17) 20.1-20.3
► EXAM 2→	**May 17 (Monday)**		
ENERGY	May 19	Fossil Fuels and Nuclear Energy	(18) 14.2-14.5
	May 21-24	Renewable Energy	(19) 16.1-16.6
POLLUTION	May 26	Solid Waste: Landfills and Recycling	(20) 21.1-21.3
	May 28	Hazardous Chemicals	(21) 22.1-22.5
	May 31	Sustainable Business & Natural Capital	(22) 2.1-2.2
ECONOMICS	June 2-4	Sustainable Communities & Lifestyles	(22) 23.1-23.3

► FINAL EXAM **June 9** **WEDNESDAY** **7:30-10:00 AM**

LAB SCHEDULE – SPRING 2021

Section 1: Tuesday 1:30-4:00 PM – *Teaching Assistant* – Kayla Leister
Section 2: Wednesday 2:45-5:15 PM – *Teaching Assistant* – Timmy Mooring

Bring your laptop computer and calculator to all indoor labs

DATE (TUES-WED)	**TOPIC**	**LAB ACTIVITY**
Mar 2-3	Biodiversity	(1) Millennium Ecosystem Assessment
Mar 9-10	Biodiversity	(2) Sunset Cliffs Tidepools ○ Tues 3/9 – Low tide @ 1:21 PM -1.0 ft. ○ Wed 3/10 – Low tide @ 1:56 PM -1.0 ft. ○ Thurs 3/11 – Low tide @ 2:27 PM -0.9 ft. *BACKUP DAY*
Mar 16-17	Ecosystems	(3) Classic Plant Experiments
Mar 23-24	Ecosystems	(4) Ecosphere Project
Mar 30-31	MENTAL HEALTH DAY (no class)	
Apr 6-7	Ecosystems	(5) Kuparuk River Graphing; Dead Zone Exercise
Apr 13-14	Biodiversity	(6) Zebra Mussel Invasion
Apr 20-21	Biodiversity	(7) Designing Biodiversity Reserves
Apr 27-28	Biodiversity	(8) Flex Canyon Field Trip: native & introduced plants
May 4-5 Apr 5	MENTAL HEALTH DAY (no class) ► **Exam 1**	
May 11-12	Climate Change	(9) Meadow Warming Experiment; Marmots and Robins
May 18-19 May 17	Biodiversity ► **Exam 2**	(10) Famosa Slough Field Trip: Bird Biodiversity
May 25-26	Sustainability	(11) 'Affluenza'- Consumerism and Lifestyle
June 1-2	No Lab	

► **FINAL EXAM** **June 9** **WEDNESDAY** **7:30-10:00 AM**