

Biology 4030 Syllabus

Animal Behavior

Fall 2024



But ask the animals, and they will teach you, or the birds of the air, and they will tell you; or let the fish of the sea inform you. Which of all these does not know that the hand of the Lord has done this? (Job 12: 7-10, NIV)

Catalog Course Description :

BIO 4030-Animal Behavior (3 units)

An exploration of the behavioral biology of animals, building on the foundation of Tinbergen's Four Problems and incorporating the insights of ethology, psychology, behavioral ecology, and cognitive ethology. Topics include proximate and ultimate mechanisms, behavioral genetics, developmental ethology, neurophysiology, learning, communication, reproduction, sexual selection, parasite and predator defense, mating systems, parental behavior, and sociality. The evolutionary basis of behavior is emphasized, including natural selection, developmental genetics, and domestication. Guest lectures and films expand on the reading and lecture content, and conservation issues are explored. Prerequisite: BIO 2011

BIO 4030L-Lab (1 unit) - A laboratory that is a co-requisite for BIO 4030 in which students complete a semester-long team research project at the San Diego Zoo.

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)

TA/Grader: **Brooke Ridout**, Biology B.S. senior
E-mail: bridout0021@pointloma.edu

Texts: Animal Behavior, 12th edition by Dustin Rubenstein; Sinauer, 2023; ISBN-13: 978-1108745727
Measuring Behavior, 4th edition, by Melissa Bateson & Paul Martin; Cambridge University Press, 2021; ISBN-13: 978-1108745727

Supplemental Text: Animal Behavior, 9th edition, by John Alcock (provided)

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

Meetings: Lecture: MWF 12:15-1:10
Rohr Science 40

Lab: Monday 2:45-6:15 PM Rohr Science 40

Student Learning Outcomes:

Upon completion of the course, you will be able to:

- state Tinbergen's four problems and identify questions as being either proximate or ultimate
- explain how behavior develops on the proximate level and give hypotheses for behavioral differences
- design, execute, and interpret an original research project based on behavioral observations
- argue for the possession of emotions, self-awareness, and consciousness in non-human animals
- articulate the importance of behavior to the practice of conservation biology

COURSE DESIGN

(1) Textbook Readings and Guided Questions: I have prepared a set of guided questions for each topic reading in the Animal Behavior textbook that will be posted on Canvas. The guided questions are designed to: (1) help you focus on the information that is most relevant to this course, (2) prepare you for the clicker review quizzes and the midterm exams, and (3) give you the foundational knowledge needed for activities.

(2) Canvas: All the class material will be on the Canvas site, and assignments will be submitted via Canvas and graded online. All assignments have a due date, so try to stay current. Note that CANVAS DOES NOT SUPPORT PAGES – you may submit Word or PDF documents. Your grader and I will often give you feedback on Canvas, so be sure to set up Canvas to notify you when you get comments.

(3) Late Assignments: Late penalties will apply for all assignments submitted after the due date. For labs and journal article assignments (20 pts), 2 points will be deducted for each day late (no points after 10 days). A proportionately similar penalty will be applied for assignments of different point values. The intent of late penalties is to encourage you to turn in your work on time, and to be fair to those who do turn in their work on time. However, if you have a legitimate reason for submitting an assignment late, please tell me (by emailing directly) and the grader (by including a note in the text box when you submit).

(4) Academic Honesty: The PLNU policy on academic honesty is listed under the institutional policies below. My experience is that many students are not aware that some of their regular practices are considered plagiarism. For example, while you are free to discuss readings and lecture material among yourselves, I expect that you will each do your own work on individual assignments. In this case, teaming up with other students to write joint answers is plagiarism. Do not share electronic files of your answers to an assignment with another student. Copying and pasting answers to assignments from online sources is very much plagiarism – use your own words and ideas!

(5) iClicker2 Remotes: Our class meetings will consist of a combination of lecture and small group activities. To enable participation by everyone, I require you to have an iClicker2 remote for use in every class. Your answers will be recorded and points assigned based on class participation (being engaged in class activities) and performance (getting the right answer). Weekly review quizzes are based on the reading assignments.

(6) Course Attendance Policy: Regular and punctual attendance is important for optimal achievement, and is a requirement for this course. There will be an attendance clipboard for you to sign in with at every class meeting. You are permitted five (5) absences without penalty. Excessive unexcused absences will result in points being deducted from your Attendance Participation grade. Note that there are 40 class meetings on the MWF fall semester schedule, with 5 absences representing 12.5% of class time.

(7) Journal Articles: A crucial ingredient in the process of becoming a scientist is the reading and interpretation of journal articles. We will read several classic animal behavior articles relevant to our current topic. Each topic will involve a different task, such as writing an abstract, identifying the hypotheses being tested, and so forth.

(8) Labs: The first few labs will involve training sessions on the methodology of conducting behavioral research, which will prepare you for your field research project at the San Diego Zoo or Safari Park. The final lab is reserved for Zoom presentations of your research projects.

(9) Exams: Exams will be administered during lab periods using your iClicker2 in the 'self-paced' mode. Exams will consist of a combination of multiple choice questions and some short answers or essays. The final exam will be semi-cumulative, meaning that key concepts will be included from the entire semester. A study guide will be available on Canvas for each exam.

(10) Field Research Project: Each of you will work with a partner to conduct a zoo research project involving behavioral observations at the San Diego Zoo or Safari Park. I will be working with zoo staff (primarily Jessica Sheftel) to identify behavioral research projects that will be most beneficial for zoo management and student learning – you will then be assigned a project. As part of our mutual arrangement with the zoo, each student will receive a semester entrance passe to access the zoo or safari park. Once you start the on-site behavioral observations, plan to conduct observations at 1-2 times a week for 8 weeks to get a good sample size – 15-20 hours of observations per student is the goal. Following completion of the field work, you will analyze your data and write a scientific report based on journal article format. All project reports are required to have a data analysis and literature review component to them (I will give you specific guidelines). You will give a PowerPoint presentation (plus Q&A) during the final lab meeting which will be on Zoom so that they will be available to the zoo managers. Teams will complete peer review reports at the semester's end.

Grading Criteria

Points are estimates and may change

● Guided questions 20 @ 10 pts	200
● Attendance points	50
● iClicker Participation points	50
● Midterm exams - 2 @ 100 pts	200
● Cumulative final exam	100
● Labs	100
● Journal article assignments – 5 @ 20 pts	100
● Team research paper	100
TOTAL POINTS	900

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



education in a vital Christian
is modeled and formed, and service

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 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.

General Education: This course is one of the components of the General Education Program at Point Loma Nazarene University, under the category of “Exploring an Interdependent World.” By including this course in a common educational experience for undergraduates, the faculty supports an introduction to the natural and social sciences as tools for exploring the world, with emphasis on collecting and interpreting empirical data for both theoretical and practical purposes. 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 cultures.

PLNU Attendance and Participation Policy: Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in 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. See [Academic Policies](#) in the Undergraduate Academic Catalog.

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 includes 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. Such acts include copying assignments from another student, or copying and pasting answers from the reading into your answer – both involve using someone else's words as if they were your own. Much of the learning process involves articulating the answer in your own words, so bypassing this step will almost guarantee an inadequate understanding of the material. Please write using your own words, and no copy-pasting! A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination. See [Academic Policies](#) for definitions of kinds of academic dishonesty and 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. Section 504 (a) 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 all 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 Copyright Policy: PLNU, 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 on this syllabus. 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.

ANIMAL BEHAVIOR CLASS SCHEDULE - FALL 2024

DATE	TOPIC	CHAPTER
Sept 3-6	An introduction to animal behavior	1
Sept 9-13	Proximate and ultimate causes of behavior <i>JOURNAL ARTICLE #1</i>	2
Sept 16-20	The development of behavior: focus on genes	3
Sept 23-27	The development of behavior: focus on environment <i>JOURNAL ARTICLE #2</i>	4
Sept 30-Oct 4	Control of behavior: neural mechanisms	4
Oct 7-11	Organization of behavior: neurons and hormones Exam 1-Monday Oct 7	5
Oct 14-18	Behavioral adaptations <i>JOURNAL ARTICLE #3</i>	6
Oct 21-23 Oct 25	Parasite defense and animal medicine FALL BREAK	Hart & Hart 2018
Oct 28-Nov 1	Evolution of feeding behavior <i>JOURNAL ARTICLE #4</i>	7
Nov 4-8	Evolution of communication	8
Nov 11-15	Evolution of reproductive behavior Exam 2 – Monday Nov 11 <i>JOURNAL ARTICLE #5</i>	9
Nov 18-22	Evolution of mating systems	10
Nov 25 Nov 27-29	Evolution of parental care THANKSGIVING BREAK <i>JOURNAL ARTICLE #6</i>	11
Dec 2-6	Evolution of social behavior	12
Nov 9-13	Evolution and domestication of dogs	Morey 1994
Dec 18	FINAL EXAM WEDNESDAY DEC 18 10:30-1:00	

ANIMAL BEHAVIOR LAB SCHEDULE - FALL 2024

<u>Monday</u>	<u>Topic</u>	<u>Reading</u>
Sept 9	Behavioral Observation Methods I	Measuring Behavior: Ch. 1-4
Sept 16	Behavioral Observation Methods II	Measuring Behavior: Ch. 5-8
Sept 23	Behavioral Observation Methods III	San Diego Zoo
Sept 30	Zoo Research Project	
Oct 7	Midterm Exam 1	
Oct 14	Zoo Research Project	
Oct 21	Zoo Research Project	
Oct 28	Zoo Research Project	
Nov 4	Zoo Research Project	
Nov 11	Midterm Exam 2	
Nov 18	Zoo Research Project	
Nov 25	Zoo Research Project	
Dec 2	Zoo Research Project	
Dec 9	Research Project Presentations	

Animal Behavior (Alcock, 9th edition) Readings - Guided Questions 2024

- Supplemental coverage of topics not fully covered by the new textbook

Week	Chapter	Section
(1) Sept 3-6	1-An evolutionary approach to animal behavior (5 pts)	<ul style="list-style-type: none"> • Levels of analysis: 8-11 • B&M: 30-32
(2) Sept 9-13	2-Understanding the causes of bird song	<ul style="list-style-type: none"> • Proximate causes: 29-43 • Ultimate causes: 43-59
(3) Sept 16-20	3-Development of behavior (Heredity)	<ul style="list-style-type: none"> • Introduction: 64-72 • Role of Genes: 76-87
(4) Sept 23-27	3-Development of behavior (Environment)	Role of environment: 87-104
(5) Sept 30-Oct 4	4-Control of behavior: Neural mechanisms	Neurons & stimulus filtering: 107-131
(6) Oct 7-11	5-Organization of behavior	<ul style="list-style-type: none"> • Neurons hormones: 149-153 • Biological rhythms: 153-167
(7) Oct 14-18	6-Behavioral adaptations for survival	pp. 183-202
(8) Oct 21-25	Adaptive responses to parasites	How mammals stay healthy (Hart & Hart 2018)
(9) Oct 28- Nov 1	7-Evolution of feeding behavior	<ul style="list-style-type: none"> • Optimal foraging: 219-228 • Waggles & spices: 228-246
(10) Nov 4-8	8-Evolution of communication	<ul style="list-style-type: none"> • Hyena pseudopenis: 287-294 • Honest signals: 294-326
(11) Nov 11-15	9-Evolution of reproductive behavior	Pages 329-375
(12) Nov 18-22	10-Evolution of mating systems	Pages 379-418
(13) Nov 25-26	11-Evolution of parental care	Pages 421-503
(14) Dec 2-6	12-Evolution of social behavior	Pages 421-503
(15) Dec 9-13	Evolution and domestication of dogs	Early Evolution of the Dog (Morey 1994)

Animal Behavior (Rubenstein, 12th edition) Readings - Guided Questions 2024

Week	Chapter	Section
(1) Sept 3-6	1-An Introduction to Animal Behavior	1.1-Natural Selection and the Evolution of Behavior <ul style="list-style-type: none"> • Tinbergen's Levels of Analysis (8-11) <ul style="list-style-type: none"> o B&M: 30-32
(2) Sept 9-13	2-The Integrative Study of Behavior	PROXIMATE CAUSES <ul style="list-style-type: none"> • 2.1 The Development of Song Learning • 2.2 The Mechanisms of Song Learning ULTIMATE CAUSES <ul style="list-style-type: none"> • 2.3 The Evolution of Song Learning • 2.4 The Adaptive Value of Song Learning
(3) Sept 16-20	3-The Developmental and Molecular Bases of Behavior	3.1 Behavior Requires Genes and Environment <ul style="list-style-type: none"> • Box 3.1 Behavioral genetics Gene regulation influences behavior <ul style="list-style-type: none"> • Box 3.3 Migratory restlessness
(4) Sept 23-27	3-The Developmental and Molecular Bases of Behavior	Alcock 9 th Edition 3-Development of behavior <ul style="list-style-type: none"> • Role of the Environment
(5) Sept 30-Oct 4	4-The Neural Basis of Behavior	4.1 Responding to Stimuli <ul style="list-style-type: none"> • How moths avoid bats, Box 4.1 4.2 Sensory Stimuli and Nervous System Control 4.3 Translating Sensory Stimuli into Behavior <ul style="list-style-type: none"> • Box 4.3 Stimulus filtering • Box 4.4 Cortical magnification
(6) Oct 7-11	5-The Physiological and Endocrine Bases of Behavior	5.1 Endogenous rhythms 5.2 Cues that Entrain Cycles of Behavior 5.3 Hormones and Behavior
(7) Oct 14-18	<i>The Adaptive Basis of Behavior</i> <ul style="list-style-type: none"> • Chapter 1, section 1.2 	1.2 Approaches to Studying Behavior <ul style="list-style-type: none"> • Comparative approach • Box 1.2 Phylogenies and the comparative method • Examining the Adaptive Basis of Behavior • Inferring the Evolutionary History of Behavior
(8) Oct 21-25	<i>Adaptive responses to parasites</i>	Supplemental reading: <i>How mammals stay healthy</i>

(9) Oct 28- Nov 1	6-Avoiding Predators and Finding Food	6.1 Antipredator Behavior 6.2 Foraging Behavior <ul style="list-style-type: none"> • Optimal Foraging Theory
(10) Nov 4-8	8-Principles of communication	8.1 Communication and Animal Signals <ul style="list-style-type: none"> • A Communication Framework • Functionally Referent Signals (waggle dance) 8.2 The Evolution of Animal Signals <ul style="list-style-type: none"> • Panda Principle • Preexisting Traits and Biases 8.3 The Function of Animal Signals <ul style="list-style-type: none"> • Honest Signaling • Deceitful Signaling • Eavesdropping on Others
(11) Nov 11-15	9-Reproductive Behavior	9.1 Sexual Selection 9.2 Intrasexual Selection-Competition for Mates <ul style="list-style-type: none"> • Conditional Mating Tactics versus Alternative Mating Strategies • Sperm Competition • Paternity Assurance 9.3 Intersexual Selection and Mate Choice <ul style="list-style-type: none"> • Box 9.2 Peacocks
(12) Nov 18-22	10-Mating Systems	10.1 Monogamy 10.2 Polyandry 10.3 Polygyny <ul style="list-style-type: none"> • Female Defense Polygyny • Resource Defense Polygyny • Lek Polygyny
(13) Nov 25-26	11-Parental Care	11.1 Offspring Value and Parental Investment 11.2 To Care or Not to Care <ul style="list-style-type: none"> • Current versus Future Reproduction • Sexual Conflict and Parental Care
(14) Dec 2-6	12-Principles of Social Evolution 13-Social Behavior and Sociality	12.1 Altruism and Levels of Selection 12.2 Kin Selection and Inclusive Fitness <ul style="list-style-type: none"> • Haplodiploidy and Eusociality • Sterility and Caste Differentiation 13.1 Forms of Social Behavior <ul style="list-style-type: none"> • Mutual Benefit • Altruism and Reciprocity • Selfishness and Spite 13.2 Evolution of Cooperative Breeding
(15) Dec 9-13	Evolution and domestication of dogs	Supplemental reading: <i>The Early Evolution of the Domestic Dog</i>

Measuring Behaviour 4th edition – Readings 2024

Chapter	Sections to focus on
Chapter 1: Introduction*	Steps involved in studying behaviour – 1.4: 6-9
Chapter 2: Science and Truth	Definitions of key terms – Box 2.1: 12-13 [review] The evidence pyramid – 2.4.1: 22-24
Chapter 3: Choosing a Research Question*	Tinbergen’s Four Questions – 3.1: 30-32 Hypotheses and predictions – 3.5: 37-39 and Box 3.1
Chapter 4: Designing a Behavioural Study*	Different types of design – 4.2: 42-43 When to measure behavior – 4.8: 57-58
Chapter 5: Ethics and the Law	When is risk of harm ethically justifiable? – 5.2.3: 66-69 Animal research ethics – 5.3: 69-72
Chapter 6: Defining Behavioural Metrics*	Entire chapter – 6: 79-93
Chapter 7: Recording Methods*	Observations of spontaneous behaviour – 7.3: 99 Sampling rules – 7.4: 99-102 Recording rules – 7.5:102-109 and Box 7.2
Chapter 8: Recording Technology*	Data pipelines – 8.2: 111-114 (optional) Check sheets – 8.3.11: 122-124
Chapter 9: Individuals and Groups*	Identifying individuals – 9.2: 137-140 Social network analysis – 9.3: 140-146 (optional) Dominance hierarchies – 9.4: 146-151
Chapter 10: Measurement Quality	Optional reading – very useful
Chapter 11: Data Analysis	Optional reading – very useful
Chapter 12: Interpreting and Communicating Findings	Common statistical mistakes – 12.1: 197-201 Writing a scientific paper – 12.2: 201-209

* Required reading for *Behavioral Observation Methods* (56 pp.)

Classic journal articles in Animal Behavior – 2024

Article #	Citation	Due Monday
1	Marler P, Tamura M (1964). Culturally transmitted patterns of vocal behavior in sparrows. <i>Science</i> 146: 1483-1486	Sept 16
2	Garcia J, Koelling RA (1966). Relation of cue to consequence in avoidance learning. <i>Psychonomic Science</i> 4: 123-124.	Sept 30
3	McComb, K (1987). Roaring by red deer stags. <i>Nature</i> 330:648-649.	Oct 21
4	Zach R (1979). Shell dropping: decision-making and optimal foraging in northwestern crows. <i>Behaviour</i> 68:106-117.	Nov 4
5	Andersson M (1982). Female choice selects for extreme tail length in a widowbird. <i>Nature</i> 299:818-820.	Nov 18
6	Hart, B. L., & Hart, L. A. (1992). Reciprocal allogrooming in impala, <i>Aepyceros melampus</i> . <i>Animal Behaviour</i> 44:1073-1083.	Dec 2

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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

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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

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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](#). 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.

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. 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

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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](#).

General Education (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.

- Appointment Calendar: <https://plnu.mywconline.com/>
- Website: <https://www.pointloma.edu/centers-institutes/loma-writing-center>
- Email: writingcenter@pointloma.edu

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.

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.

