POINT 1902 LOMA
NAZARENE UNIVERSITY

Biology Department
BIO 1001 - Human Biology and Bioethics
Fall 2026

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.

PLNU General Education 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.

Course description
PLNU catalog description: *An exploration of assorted topics in human biology as they intersect with bioethical and sustainability issues of current interest in society. Topics include human physiology, health, reproduction, genetics, and ecology. Course examines the underlying scientific basis of specific examples and how they relate to everyday life. Course approach emphasizes the process of science, critical thinking, active learning, social relevancy, and building connections between case studies and general concepts of biology. Offered every year. Lecture 3 units, Lab 1 unit* NOTE: This course is one of many ways to earn units in the GE program at PLNU, but BIO 1001 is required for Social Work majors.

Important date: Last day to add or drop the course is Sept. 11, 2026

Lecture and Lab Schedule
Lecture sessions will be on Mondays, Wednesdays, & Fridays from 11:00-11:55 AM in Latter Hall 2 (Dr. Anderson)
Lab Section 1 will be on Thursdays from 8:00AM – 10:30 AM in Rohr Science 40 (Prof. Salgado)
Lab Section 2 will be on Thursdays from 11:00 AM – 1:30PM in Rohr Science 40 (Prof. Salgado)

Instructor information:

Dr. Dianne Anderson, Ph.D. dianneanderson@pointloma.edu
Phone: (619) 849-2705 Office hours in Rohr Science 146: Mondays 2:30-4:00pm, Thursdays 1:00-3:00 PM or by appt.

Professor Becca Salgado, MS bsalgado@pointloma.edu
949-933-6795 Office hours by appt. in Rohr Science 110

Course Learning Outcomes (See Core Competencies and Concepts at end of syllabus for more info)
After successful completion of this course, you will be able to:

1. Apply the following core concepts in biology to explain a variety of biological examples:
   a. Cells, organs/tissues, organisms and ecosystems are interconnected, interacting, and regulated.
   b. Basic units of structure define the function of cells, organs/tissues, organisms and ecosystems.
   c. Energy and matter are transformed within cells, organs/tissues, organisms and ecosystems.
   d. Information is stored, transferred, and expressed in cells, organs/tissues and organisms.
   e. The diversity of life has changed over time, and populations of organisms continue to change over time.
2. Use the processes and tools of scientific inquiry (both hypothesis testing and discovery science) to test biological hypotheses and to skeptically evaluate scientific information.
3. Given a bioethical issue, identify major stakeholders, then determine their motivation and position of each stakeholder.
4. Prepare and/or analyze graphs to interpret data and to draw valid conclusions to demonstrate critical thinking.*
5. Design and conduct at least one independent investigation as a demonstration of critical thinking.*
6. Recognize biology as a problem-solving science based on past and continuing experimentation and evaluate biology's role and impact on society in terms of meeting major societal challenges.

**Selected questions from the Test of Scientific Literacy Skills (TOSLS) will be included on the final exam to assess General Education Learning Outcome 1d. Critical Thinking: Students will be able to examine, critique, and synthesize information in order to arrive at reasoned conclusions.*

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 (3 units lecture and 1 unit lab) delivered over 15 weeks. It is anticipated that you will spend a minimum of 37.5 participation hours per credit hour on your coursework, so for this course, that means approximately 150 total hours during the semester. In addition to lab and lecture time, you are expected to spend approximately 4 hours studying course material, completing assignments, etc. **each week**.

Required books for the course:
The Story of Life: Great Discoveries in Biology (2019) by Sean B. Carroll (ISBN-13: 978-0393631562)
Origins: Christian perspectives on Creation, Evol., & Intelligent Design (2011) by D. Haarsma (ISBN -978-1-59255-573-4)

Online resource (available at no charge)
Open Textbook Library *Concepts of Biology* textbook

Participation and cooperation
We encourage you to be fully present in class—mind, body, and spirit—and to make your presence a positive contribution to the learning environment. PLNU is a community where students practice becoming responsible, respectful, and engaged adults. Part of this growth involves showing up prepared for class, contributing positively, and working well with others. The **Attendance, Participation, & Professional conduct (APPC) score** reflects your engagement & professional behavior.

- Default Score: 20/20 points.
- Attendance: One point may be deducted for every two lecture absences and for every lab absence.
- Participation & Professional Conduct: Points may also be deducted for behaviors that disrupt learning, such as talking while the instructor is speaking, using a laptop or phone for non-class purposes, or not contributing appropriately to group work.

In an effort to create the best learning environment possible, all students should work in groups when asked to do so – whether in the lab or lecture. I may assign groups, and I will shuffle the groups several times during the semester. You may be surprised how much you can learn from one another, especially from people who you may not have chosen to work with in lab. Phones must be muted or on vibrate during class. Only in cases of emergency should you leave class to take a phone call, unless the lab is on a break. **Texting should be extremely limited or non-existent – it really CAN wait until a break.** NO food or drinks are allowed in the lab rooms.

Grading
BIO 1001L Human Biology & Bioethics Lab is a co-requisite for BIO 1001. Students enrolled in BIO 1001 must be enrolled in BIO 1001L, and vice versa. If BIO 1001 is dropped, BIO 1001L must also be dropped. Your grade for BIO 1001 and BIO 1001L will be calculated together, and the same final grade will be entered for both courses. Lecture sessions will consist of brief 20- minute lectures interspersed with in-class activities to give you a chance to think about and apply concepts.

Attending lab is mandatory and you will not be able to make up labs that are missed unless you can attend the other lab section on the same day. In most cases, you will not be able to receive points for turning in assignments from a lab that you missed. In some cases, I will approve an excuse, and you will be able to earn points for a missed lab if you turn in the lab assignment on time. Please make all attempts to attend the other lab section if you can't attend your own section. If you complete all 14 labs, one counts as extra credit.

Grades will be given on the basis of earned points as a percentage of total points possible.

A	90%	
B	80%	A "+" will be assigned to the upper 2% in each range (except
C	70%	for A+ which can't be used), and a "-" will be assigned to
D	60%	the lowest 2% in each range.
F	50%	Examples: 91% = A- 69% = D+

Students are expected to take the exams on the days scheduled unless they have an excuse cleared by me no later than the Friday preceding the exam. If there is an approved conflict you will be expected to take the exam **prior to** the scheduled time. If something unexpected happens, we will make appropriate arrangements at that time. Makeup exams may not be the same as the original and will generally be more difficult in nature. Un-excused misses will result in a zero grade. You will have two weeks from the time exams are handed back to discuss possible corrections, after which the grade becomes permanent.

Final exam
Successful completion of this class requires taking the final examination on its scheduled day **- see detailed schedule later in this syllabus for date and time.** The entire university final examination schedule is posted on the Class 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, or time constraints due to EAC accommodations, no requests for alternative final examinations will be granted.

Assignment or assessment	Description	Points possible
4 lecture exams (100 points each)	Combination of multiple choice and short essay	400
Final exam (includes assessment of GELO)	Multiple choice (partly comprehensive)	125
13 Lab activities	Pre-lab questions, in-lab graphs, drawings, answers to questions, etc.	130 (10 pts each week)
Various small activities	A variety of small activities will be done alone or with a partner or a team	approx. 100
1 lab report	Materials/methods, results, and conclusions	25
"Biology in my Life"	Asking and answering a question relevant to the course	10
6 Spiritual practices/ Biology reflections	Thoughts on Shared meals, Sabbath, Silence, Solitude, Simplicity	30
Nature journal	Observations, sketches, questions about the living world	25
APPC score	Attendance, professionalism, etc.	20
	Total points	**Approx. 865 pts.**

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. Regular assignments turned in late will be graded as follows: up to 1 day late = 50% reduction, more than 1 day late = no credit. Incompletes will only be assigned in extremely unusual circumstances.

Tutorial Center
The PLNU Tutorial Center is available free of charge for all current, undergraduate PLNU students. It offers tutoring for most subjects, as well as for general help with paper editing, study skills, etc. The Tutorial Services is located on main floor of Ryan Library or available online. Tutoring is available by appointment only, and appointments must be made at least one day in advance. Appointments may be arranged at https://www.pointloma.edu/offices/tutorial-services

Emphasis on spiritual disciplines
Living a meaningful Christian life involves intentionally doing things that improve with walk with God, and that may also have positive effects on your mental and physical health. In this course, you will learn about and practice the disciplines of silence, solitude, simplicity, sharing meals and observing the Sabbath, then write reflections. Note: there are many other disciplines that Christians may practice other than these, but these blend with BIO 1001 well! 😊

Use of laptops in class
I discourage use of laptops/tablets/iPads in the lecture sessions **UNLESS** you feel strongly that you take your best notes via computer or want to access the Powerpoint slides during class, and you feel that it will not be distracting to yourself or others around you. I may call on students using computers more often than other students during class, just to make sure that you are on task. If computer use becomes a problem for some students, everyone will lose the privilege. In contrast, I will sometimes ask you to bring your laptop to lecture or lab, generally one per pair of students, so that you can look up information, work on lab reports, etc.

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. All of the BIO 1001 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 bioethical situations, fetal pig dissection, evolution, human miscarriages, death, organ donation/transplantation, and vaccination. 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 BIO 1001, we will cover a variety of topics, some of which you may find triggering. These topics include bioethical situations, human miscarriages, death and organ donation/transplantation. 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.

GENERAL PLNU POLICIES

General Course Concerns
If you have a concern related to the content or structure of this course, please bring your concern(s) to me (the instructor) in a timely manner, so that we have the opportunity to discuss your thoughts and work together toward a solution.

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.

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. Please consult the Academic Honesty Policy in the University Catalog for definitions of kinds of academic dishonesty and for further policy information.

PLNU Academic Behavior Policy
Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Students are expected to take the initiative to learn and conduct themselves in a mature and civil manner in the classroom environment. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to these behavioral standards may be subject to disciplinary action, including removal from class or further university sanctions. For a full definition of disruptive behavior, response procedures, and the appeal process, please consult the Academic Behavior Policy in the University Catalog.

PLNU 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. You can find out how to properly cite AI use here: https://apastyle.apa.org/blog/how-to-cite-chatgpt

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, by email or phone at 619-849-2533. 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 approved accommodations. Professors are able to view a student's approved accommodations through Accommodate.
PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course. Accommodations are not retroactive; as such, 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-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore, planning ahead is vital in establishing appropriate accommodations for equal access to this course. 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 eligibility 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 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) has experienced other forms of discrimination, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

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. 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 or consult the list of campus pastors. If you (or someone you know) has experienced other forms of discrimination or bias, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

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
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.
Walk-ins are welcome, but we recommend making an appointment in advance. For information about how to make in-person or online appointments, see Loma Writing Center webpage or visit the Loma Writing Center, Ryan Library 1st floor, room 221.

- Appointment Calendar
- Website
- Email

BIO 1001 Fall 2026 Schedule
The detailed content and assignments are posted on Canvas.

Week	Lecture Topic(s) MWF	Lab topic (Thurs.)
1 **Aug. 31**	Intro to course, the process of science, core concepts & bioinspiration	Nature of Science & Process of Science
2 **Sept. 7**	**MONDAY - LABOR Day – NO LECTURE** Ecology (populations, communities)	Climate change & Populations
3 **Sept. 14**	Ecology (ecosystems, biomes)	Ecosystems
4 **Sept. 21**	**MONDAY - Exam #1 - Ecology and process of science** Cells & Molecules (biochemistry) and bioethics	Molecules, organelles & cells
5 **Sept. 28**	Cells & Molecules (cells, enzymes, metabolism) and bioethics	Enzymes
6 **Oct. 5**	**MONDAY - Exam #2 - Cells & Molecules** Genetics (DNA synthesis, genetic variation, mitosis, meiosis) and bioethics	Cell division, cancer & differentiation
7 **Oct. 12**	Genetics (classical genetics, molecular genetics) and bioethics	Meiosis & Variation
8 **Oct. 19**	Genetics (biotechnology, genetic analysis, genetic modification) and bioethics **THURSDAY/FRIDAY - FALL BREAK – NO LAB or LECTURE**	**No lab**
9 **Oct. 26**	**MONDAY - Exam #3 - Genetics** Populations change over time (natural selection)	Structure & function
10 **Nov. 2**	Populations change over time (origins, evidence for change)	Natural selection (Tidepool field trip – TBD)
11 **Nov. 9**	Populations change over time (other mechanisms of change, biodiversity)	Skulls
12 **Nov. 16**	**MONDAY - Exam #4 - Populations change over time** Human physiology (homeostasis, digestive system) and bioethics	San Diego Zoo
13 **Nov. 23**	Human physiology (digestive system) and bioethics **THANKSGIVING BREAK- NO LECTURE/LAB W, Th, F**	
14 **Nov. 30**	Human Physiology (respiratory, cardiovascular and urinary systems) and bioethics	Fetal pig dissection
15 **Dec. 7**	Human Physiology (immune, endocrine, nervous, and reproductive systems) and bioethics	Human Physiology
Dec. 18	**Final exam – Friday, December 18, 2026 from 10:30 AM-1:00 PM** The university final exam schedule is posted on the PLNU website. No requests for early examinations will be approved, so make all travel plans with this in mind.	

BIO1001 Core Concepts and Conceptual Threads

Core Concepts (as identified by Vision & Change, and informed by NGSS) **"STEMS"**	**Examples of questions or tasks used to assess understanding of core concepts**	**Ecology**	**Molecules and Cells**	**Genetics**	**Change in populations**	**Human Physiology**
S - Living **systems** at all levels are interconnected, interacting, and regulated.	Analyze a system (cell, organism, or ecosystem) to predict a possible response to a particular change. Analyze a system (cell, organism, or ecosystem) to determine how abiotic and biotic components interact.	x	x		x	x
T - Information is stored, **transferred,** and expressed at the cell, organ and system level.	Explain how information is transferred. from DNA to RNA to proteins. Explain how information is transferred from either cell to cell, or from one generation to the next. Trace information flows from stimulus to response.		x	x	x	x
E - The diversity of life has changed and populations continue to change over time **(life has evolved and is evolving)**.	Use the theory of natural selection to explain how certain characteristics of species likely changed over time. Describe the evidence for populations changing over time.	x	x	x	x	x
M - Matter and energy are transformed within cells, organisms and ecosystems.	Trace energy in various forms as it flows through a system. Trace matter (C, N, or O) in various forms as it cycles through a system.	x	x			x
S - The **structure** of a molecule, organelle, cell, organ, or body part, etc. often relates to the **function** of that particular structure.	Analyze a structure (molecule, organelle, cell, organ, organ system, or organism) to predict or to describe its function. Analyze the relationship of the surface area-to-volume ratio of a structure (organelle, cell, organ, or organism) to its function.	x	x	x	x	x
Conceptual Threads	**Examples of topics**					
Food	Food chains, food waste, sustainable farming, molecules in food, what can you afford to care about, spices, variety in traits (apple tasting), GE crops, food varieties, probiotics in food	X	X	X	X	X
Corn seedlings	Abiotic factors, growth/development, chlorophyll, metabolism, dominant & recessive traits, GE corn (nitrogen-fixing and drought-tolerant)	X	X	X		
Vaccines	Vaccine testing, types of vaccines, mRNA to proteins, how vaccines stimulate immunity		X	X		X
In-vitro fertilization	Sperm cells, mitosis vs. meiosis, embryo growth/development, IVF embryo selection, increasing rates of infertility, hormone treatments before implantation		X	X	X	X

BIO1001 Core Competencies

Core competencies in science (as identified by Vision & Change, 2011 and informed by NGSS)	**Sample of questions/tasks used for formative assessment (in-class activities) and summative assessment (quizzes and exams)** Science Skills **(SS)** indicated below	**Lab report**	**Lab activities & In-class activities**
Ability to understand the relationship between science and society	• Analyze bioethical case studies to identify stakeholders and their motivation. • Identify ways that biological information and techniques can address major societal challenges. • Given a source of information/conclusions, determine if the source is credible. **(SS #1)**		X
Ability to use quantitative reasoning	• Given a graph or table, state a valid conclusion. **(SS #2)** • Given a set of data, create an appropriate **graph, table**, or model to summarize the data. **(SS #3)**	X	X
Ability to develop and/or use modeling and simulation	• Given a set of data, create an appropriate graph, table, or **model** to summarize the data. **(SS #3)** •	X	X
Ability to apply the processes of science	• Given an experimental design, carry out the experiment to collect the data. **(SS #4)** • Given a hypothesis, design an experiment to test it. **(SS #5)** • Make observations, then generate a testable hypothesis. **(SS #6)**	X	X
Ability to tap into the interdisciplinary nature of science	• Use information and processes from chemistry, statistics, and various sub-disciplines to solve problems in biology.		X