POINT LOMA NAZARENE UNIVERSITY

Spring, Summer & Fall 2026
Biology Department
BIO 6084 Comprehensive Exam, 0 units

Meeting days: TBA	**Instructor title and name:** Dianne Anderson, Ph.D.
Meeting times: TBA	**Phone:** 619-849-2705
Meeting location: TBA	**E-mail:** dianneanderson@pointloma.edu
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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.

COURSE DESCRIPTION

This exam is required for students in the graduate program in general biology to complete their graduation requirements if the thesis option is not chosen. Credit/No Credit, 0 unit

COURSE LEARNING OUTCOMES and PROGRAM LEARNING OUTCOMES ASSESSED IN THIS COURSE

The Course Learning Outcomes are the first three PLO's for the program. These PLO's will be assessed by four professors using the rubric at the end of this document upon submission of the exam answers:

1. Discuss major concepts and theories in biology.
2. Carry out and communicate various experimental methods and types of data analysis.
3. Demonstrate knowledge and skills in critical thinking, such as analysis and synthesis, as applied to primary literature in the field of biology, as well as leadership or learning in science and the history/philosophy of science.

GRADING

Credit/No credit is assigned based on the satisfactory completion as described above; no letter grades are given.

EXAM FORMAT AND GRADING

A student completing the MS non-thesis option in general biology will be required to write the MS exam following the completion of all course work and on a schedule agreed on by the student and Dr. Anderson. The exam will consist of three parts:

Part I: Analysis and oral presentation of research articles related to lab courses (see table on next page)
Part II: Main ideas of 4 lab courses (see table on next page)
Part III: Main ideas of the History & Philosophy of Science course and the Learning in Science OR Leadership in Science course

You will choose **two of the four required lab courses** to focus on in the exam: one organismal/ecology/evolution course and one cell/molecular course (see categories below). Dr. Anderson will contact the appropriate professors to obtain one research article appropriate to each of the selected courses.

Organismal/Ecology/Evolution courses	Cell/molecular courses
Physiology of Plants & Animals	Developmental Biology
Marine Biology	Microbiology & Immunology
Evolutionary Biology	Genetics & Molecular Biology
Ecology of Plants & Animals	Cell Biology

Let Dr. Anderson know the following information:

1. The two lab courses you have chosen for your exam
2. Start date of the exam (you may have up to 72 hours/3 days)
3. Start time of the exam (8AM, 12PM, 4PM or 8PM)
4. 4-5 days/times that will work for you to do the oral presentation of the research articles (in-person if at all possible - Dr. Anderson will work with the two professors to arrange specific times)

Your exam must be completed at least 3 weeks before the end of the quad or semester in which you are registered for BIO 6084 to allow enough time for review before the grading period ends. If your work location has annual deadlines for submission of your posted degree for salary advancement, plan to complete your exam at least one month before that date. Also, due to faculty vacations in July/August, if the exam is completed between July 15-August 15, feedback may not be received in time for any revisions to be made in order to meet the August degree-posting date. This could result in the degree being posted in October.

Both before and during the exam, you may consult course materials, textbooks, and internet sources (including to look up terms, etc.). You may only consult the program director, not other faculty members, students, AI software, or the authors of the research articles to clarify exam questions, article content, or exam instructions. You will e-mail your completed exam to Dr. Anderson. All answers must be submitted without grammatical errors or typos and will be assessed using the rubric at the end of this syllabus.

Your completed written exam and the oral presentation will be assessed for clarity, accuracy, thoroughness, and use of appropriate vocabulary by the professors who taught the courses (see detailed rubric at the end of this document). You will be notified by Dr. Anderson if either a) all sections passed or b) at least one section did not pass and will need to be resubmitted or presented again. Depending on the time of year, you can expect feedback in approximately 2 weeks after the oral presentations. If the exam is submitted right before or during PLNU holiday breaks (Thanksgiving, Christmas, and summer), this time will be extended as faculty members may be out of the office for part of the time.

If any sections do not pass, you will schedule a 48-hour period to rewrite the section(s) to address the deficiencies, and to resubmit or re-present that portion of the exam. If that resubmission does not pass, you will receive one additional chance to rewrite or re-present before the degree will be denied.

PLNU MS in General Biology Comprehensive Exam Rubric

Part I: Research article analysis

(determination of pass/fail for rows #1-20 will be made based on a <u>combination</u> of your written answers and your oral presentation/Q&A session for each article)

Row	Paper #	Aspect of answer	Initial (fail)	Emerging (fail)	Developed (pass)	Highly Developed (pass)
1	#1a	**General relevance to field**	Missing	Unclear	Clear, but not accurate or unclear, incomplete or lacks depth of analysis	Clear and accurate
2	#1a	**General problem/ question**	Missing	Unclear	Clear, but not accurate or incomplete	Clear and accurate
3	#1a	**1st major claim**	Identified claim is inaccurate or not important	Identified claim is inaccurate or incomplete or lacks depth	Accurately identified claim, but not a main claim	Accurately identified one of most important claims
4	#1a	**Evidence**	Specific data is not identified or does not match the claim; no evidence	Relevant tables, figures, etc. are mentioned but no specific areas; 1 piece of evidence	Specific areas of relevant figures, tables, etc. are correctly identified; 2 pieces of evidence	Specific areas of relevant figures, tables, etc. are correctly identified; 2+ pieces of evidence
5	#1a	**Justification**	Justification missing for claim	Weak attempt made to justify claim, but inaccurate, incomplete, or unclear	Justification given for why data supports the claim, but not clear or incomplete	Clear justification as to why the data supports the claim
6	#1a	**Methods**	Methods missing AND not in own words	Missing some major methods OR not in own words	Major methods identified in own words, but unclear	Major methods clearly explained in own words
7	#1b	**2nd major claim**	Identified claim is inaccurate or not important	Identified claim is inaccurate or incomplete or lacks depth	Accurately identified claim, but not a main claim	Accurately identified one of most important claims
8	#1b	**Evidence**	Specific data is not identified or does not match the claim	Relevant tables, figures, etc. are mentioned but no specific areas	Specific areas of relevant figures, tables, etc. are correctly identified	Specific areas of relevant figures, tables, etc. are correctly identified
9	#1b	**Justification**	Justification missing for claim	Weak attempt made to justify claim, but inaccurate, incomplete, or unclear	Justification given for why data supports the claim, but not clear or incomplete	Clear justification as to why the data supports the claim
10	#1b	**Methods**	Methods missing	Missing some major methods OR not in own words	Major methods identified in own words, but unclear	Major methods clearly explained in own words
11	#2a	**General relevance to field**	Missing	Unclear	Clear, but not accurate or unclear, incomplete or lacks depth of analysis	Clear and accurate
12	#2a	**General problem/ question**	Missing	Unclear	Clear, but not accurate or incomplete	Clear and accurate
13	#2a	**1st major claim**	Identified claim is inaccurate or not important	Identified claim is inaccurate or incomplete or lacks depth	Accurately identified claim, but not a main claim	Accurately identified the one of most important claims
14	#2a	**Evidence**	Specific data is not identified or does not match the claim	Relevant tables, figures, etc. are mentioned but no specific areas	Specific areas of relevant figures, tables, etc. are correctly identified	Specific areas of relevant figures, tables, etc. are correctly identified
15	#2a	**Justification**	Justification missing for claim	Weak attempt made to justify claim, but inaccurate, incomplete, or unclear	Justification given for why data supports the claim, but not clear or incomplete	Clear justification as to why the data supports the claim
16	#2a	**Methods**	Methods missing	Missing some major methods OR not in own words	Major methods identified in own words, but unclear	Major methods clearly identified in own words

17	#2b	**2nd major claim**	Identified claim is inaccurate or not important	Identified claim is inaccurate or incomplete or lacks depth	Accurately identified claim, but not a main claim	Accurately identified the one of most important claims
18	#2b	**Evidence**	Specific data is not identified or does not match the claim	Relevant tables, figures, etc. are mentioned but no specific areas	Specific areas of relevant figures, tables, etc. are correctly identified	Specific areas of relevant figures, tables, etc. are correctly identified
19	#2b	**Justification**	Justification missing for claim	Weak attempt made to justify claim, but inaccurate, incomplete, or unclear	Justification given for why data supports the claim, but not clear or incomplete	Clear justification as to why the data supports the claim
20	#2b	**Methods**	Methods missing AND not in own words	Missing some major methods OR not in own words	Major methods identified in own words, but unclear	Major methods clearly identified in own words

PLNU MS in General Biology Comprehensive Exam Rubric

Part II: Description of lab course major concepts

Row	Summer course	Aspect of answer	Initial (fail)	Emerging (fail)	Developed (pass)	Highly Developed (pass)
31	#1	**Choice of topic**	Topic not addressed in course	Topic of minor importance in course	One of several main topics from course	Clearly a central topic from course
32	#1	**Topic description**	Inaccurately described	Accurately described, with minimal/no use of course vocabulary, or somewhat inaccurate	Accurately described, with some use of vocabulary from the course	Accurately described using appropriate vocabulary from the course
33	#2	**Choice of topic**	Topic not addressed in course	Topic of minor importance in course	One of several main topics from course	Clearly a central topic from course
34	#2	**Topic description**	Inaccurately described	Accurately described, with minimal/no use of course vocabulary, or somewhat inaccurate	Accurately described, with some use of vocabulary from the course	Accurately described using appropriate vocabulary from the course
35	#3	**Choice of topic**	Topic not addressed in course	Topic of minor importance in course	One of several main topics from course	Clearly a central topic from course
36	#3	**Topic description**	Inaccurately described	Accurately described, with minimal/no use of course vocabulary, or somewhat inaccurate	Accurately described, with some use of vocabulary from the course	Accurately described using appropriate vocabulary from the course
37	#4	**Choice of topic**	Topic not addressed in course	Topic of minor importance in course	One of several main topics from course	Clearly a central topic from course
38	#4	**Topic description**	Inaccurately described	Accurately described, with minimal/no use of course vocabulary, or somewhat inaccurate	Accurately described, with some use of vocabulary from the course	Accurately described using appropriate vocabulary from the course

PLNU MS in General Biology Comprehensive Exam Rubric

Part III: Questions about other major course concepts

Row	Course	Initial (fail)	Emerging (fail)	Developed (pass)	Highly Developed (pass)
39	**History & Philosophy of Science**	Answer incomplete AND inaccurate	Answer incomplete OR inaccurate	Answer accurate and complete, using some appropriate vocabulary from the course	Answer accurate, complete, and well written using appropriate vocabulary from the course
40	**Leadership in Science OR Learning in Science**	Answer incomplete AND inaccurate	Answer incomplete OR inaccurate	Answer accurate and complete, using some appropriate vocabulary from the course	Answer accurate, complete, and well written using appropriate vocabulary from the course

PLNU GENERAL POLICIES AND INFORMATION

PLNU Spiritual Care

Balboa Campus:

PLNU strives to be a place where you grow as a whole person. To this end, we provide resources for our graduate students to encounter God and grow in their Christian faith. At the Balboa campus, we have an onsite chaplain, Rev. Kevin Portillo, who is available during class break times across the week. If you have questions, a desire to meet or share any prayer requests with Rev. Portillo, you may contact him directly at KevinPortillo@pointloma.edu.

Liberty Station Campus:

PLNU strives to be a place where you grow as a whole person. To this end, we provide resources for our Graduate students to encounter God and grow in their Christian faith. At the Liberty Station campus we have an onsite chaplain who is available during class break times across the week. If you have questions, a desire to meet or share any prayer requests with Dr. Sylvia Cortez Masyuk, you may contact her directly at scortezm@pointloma.edu.

Mission Valley:

PLNU strives to be a place where you grow as a whole person. To this end, we provide resources for our Graduate students to encounter God and grow in their Christian faith. At the Mission Valley (MV) campus we have an onsite chaplain who is available during class break times across the week. If you have questions for or a desire to meet or share any prayer requests with the onsite chaplain, you may email Dr. Sylvia Cortez Masyuk at scortezm@pointloma.edu.

In addition, on the MV campus there is a prayer chapel on the third floor. It is open for use as a space set apart for quiet reflection and prayer.

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. See Graduate Academic and General Policies for definitions of kinds of academic dishonesty and for further policy information.

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 and to find sources (research articles), 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.

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 (EAC@pointloma.edu or 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 allowed 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 AP in that particular course. Accommodations are not retroactive so 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 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. 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 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) have experienced other forms of discrimination, you can find more information on reporting and resources at www.pointloma.edu/nondiscrimination.

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 http://pointloma.edu/Title-IX or as shown in the PLNU Spiritual Care section of this syllabus.

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

PLNU Course Modality Definitions

1. Online Courses: These are courses with class meetings where all instruction and interaction is fully online.
    a. Synchronous Courses: At least one class meeting takes place at a designated time.
    b. Asynchronous Courses: All class meetings are asynchronous.
2. Hybrid Courses: These are courses with class meetings that take place both in the classroom and online synchronously and/or asynchronously.
3. In-Person Courses: These are courses that meet in person with the instructor and students in a physical classroom setting. With approval by the area dean, this may include up to 25% of qualified class interactions through a Learning Management System (such as Canvas).

PLNU Attendance and Participation Policy

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements.

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.

Students who anticipate being absent for an entire week of a course should contact the instructor in advance for approval and make arrangements to complete the required coursework and/or alternative assignments assigned at the discretion of the instructor. Acceptance of late work is at the discretion of the instructor and does not waive attendance requirements. Refer to Academic Policies for additional detail.

Synchronous Attendance/Participation Definition

For synchronous courses that have specific scheduled meeting times (including in-person, hybrid, and synchronous online courses), absences are counted from the first official meeting of the class regardless of the date of the student's enrollment. For courses with specific attendance requirements, those requirements are outlined in the course syllabus.

Use of Technology

In order to be successful in the online or hybrid 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, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams requires a computer with a camera (tablets are not compatible) to complete exams online.

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

GPS Academic Resources

PLNU offers the following free academic resources virtually for Graduate Professional Studies (GPS) Students. Visit myPLNU through the links below for more information.

- The GPS Writing Center offers:
    - Zoom Writers Workshops offered each quad on a variety of helpful topics
    - One-to-one appointments with the Writing Coach
    - Microlearning YouTube Video Library for helpful tips anytime
    - Research Help Guide to help you start your research
    - The physical office is located on the third floor of the Mission Valley Regional Center off the student lounge
- Academic Writing Resources Course: Found on your Canvas Dashboard, this course is non-credit with 24/7 access, no time limits, and self-paced content. Watch a quick video run-through and take time now to explore!
- Grammarly: Students have unlimited FREE access to Grammarly for Education, a trusted tool designed to help enhance writing skills by providing real-time feedback, identifying areas for improvement, and providing suggestions. Grammarly's Generative AI is NOT available with our student accounts.
- Tutoring: Students have access to 24/7 live or scheduled subject tutoring through Tutor.com, including a Paper Drop-Off Service with feedback within 12 hours.

We are here to support you! Contact us anytime: GPSWritingCenter@pointloma.edu