

Bio4097; Senior Seminar (1 unit)

Science can only ascertain what is, but not what should be, and outside of its domain value judgments of all kinds remain necessary --- Albert Einstein

"Sometimes when uncertain of a voice from its very loudness, we catch the missing syllable in the echo. In God and Nature we have Voice and Echo " -- Henry Drummond, Natural Law in the Spiritual World, "It is the modest, not the presumptuous, inquirer who makes a real and safe progress in the discovery of divine truths. One follows Nature and Nature's God; that is, he follows God in his works and in his word." --Henry, Viscount Bolingbroke St. John (1678–1751), Letter to Mr. Pope

Spring 2023

Instructor title and name: Mike Dorrell Ph.D.	Office Phone: (619) 849-2962
Meeting days/times: Wed: 4:30 – 5:30	E-mail: mdorrell@pointloma.edu
Meeting location: Latter Hall 102	Office location and hours:
Final Exam: no final exam	Rohr Science 158; By Appointment

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 is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

INSTRUCTOR: Dr. Mike Dorrell

Office Hours: M, W 10:30 – 12:30. By appointment... Feel free to set up a time by email. I'm happy to schedule a zoom meeting with you at a time that works.

COURSE DESCRIPTION

Examination and discussion of selected biological issues with an emphasis on the relationship between Christian faith and scientific study. Course is to be taken by Biology, Biology-Chemistry and Environmental Science majors during their last semester prior to graduation. Offered every year.

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 1-unit class delivered over 15 weeks. For this course, students will spend an estimated 38 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

INTRODUCTION TO THE COURSE:

This course is, in many respects, a capstone to your college experience in one of the majors offered by the Biology department. The primarily discussion format that will be used in this course would not work without the background that you have received from the courses within your major. We will be looking at current bioethical issues. As we examine issues within the themes of evolution, creation care, and general bioethical topics, we will emphasize the relationship between Christian faith and scientific study. The quality and direction of our discussions will largely be the responsibility of you, the students. In addition to the discussions, there will be a summative essay that covers your thoughts on either evolution or environmental stewardship (your choice). We will also be discussing practical topics of relevance as you embark from PLNU, including practice writing a CV and cover letter, and interviewing, and discussing vocational topics.

BIOLOGY DEPARTMENT AND PLNU ASSESSMENT

Some of the course assignments, as well as two standardized exams, will also be used as pieces of evidence for the assessment of the effectiveness of both the biology department program learning outcomes (PLO) and PLNU as a whole (core competencies) as required by the university accrediting agency. These assessment purposes and corresponding assignments/exams are shown in the table below. These assignments and exams are required as part of your grade. You will receive points for meeting minimum requirements on the MFT biology exam, and it is important that you do your best on these exams as the results have important implications for the future directions of the department.

Assessment purpose	Corresponding assignment
Core competency: Written communication	Science/faith essay and ETS Proficiency Profile
Core competency: Oral communication	Oral presentation on bioethical issue
Core competency: Information literacy	Info literacy assignment and oral presentation
Core competency: Critical thinking	ETS Proficiency Profile
Core competency: Quantitative reasoning	ETS Proficiency Profile
PLO #1: Biology content knowledge	ETS – Major Field Test in Biology
PLO #2: Department participation	Survey
PLO #3: Rationally defensible integration of science and faith	Science/faith essay
PLO #4: Preparation for post-graduate career / studies	Survey

Learning outcomes;**1) Students will analyze, critically evaluate, and discuss ideas, arguments, and differing points of views on various topics that affect science, faith, and morality.**

- We will be reading and discussing ideas from a variety of perspectives. In doing so, we want to be hospitable to the ideas of others recognizing that through discourse we can learn from and better understand each other as we respectfully challenge ideas and allow our thinking to be challenged.

2) Students will construct a defensible position on particular issues of science and faith in both written and oral formats. [PLO #3 (Bio-BS, Bio-BA) or PLO #5 (Bio-chem, Env. Sci)]

- As part of your training here at PLNU, you have been exposed to various topics that integrate faith and science. Hopefully, through personal reflection, you have arrived at your own definition of ‘truth’ with regards to some of these issues (although this definition of ‘truth’ will continue to evolve throughout your life). It is important that you can articulate this view in such a way that you are able to explain and defend your position. This will allow you to hold strong to your values while demonstrating grace and respect towards other’s differing viewpoints.

3) Students will work with a team to evaluate, present, and lead a bioethical discussion.

- For the discussions, you will be assigned to a team. However, each person in the team should be prepared to present his/her own portion of the presentation. You will be evaluated on the quality of the presentation, including (a) how well your portion flows (beginning to end), (b) the accuracy and thoroughness of the content, However, you should also work together with your team so that the 3 portions (most teams will be groups of 3) also flows well together.

4) Students will discuss and gain a broader understanding of vocation as it relates to career, interests, and life goals.

CLASS SCHEDULE

Topics and team member names will be added based on survey and group assignments.
Visit Canvas for readings and questions.

DATE	TOPIC	READING/ASSIGNMENT	WHO
Week 1 Jan 11	Intro to Senior Seminar Select teams, topics, and dates	none	<u>Professor</u>
Week 2 Jan 18	CV and cover letter information PLNU career services	Info Literacy Assignment: Use of sources due	<u>Professor</u>
Week 3 Jan 25	ETS Proficiency exam	Be working on CV and cover letter, and science / faith essay	
Week 4 Feb 1	CV and cover letter peer feedback and interview practice	CV's and cover letters due Monday night (to canvas). Bring 2 copies of CV/ cover letter Strengths and weaknesses Q's	<u>All</u>
Week 5 Feb 8	Intro to oral presentation assignment. Q and A with professor (open discussion)	Oral presentation hints and examples. Complete the Biology department survey	<u>All</u>
Week 6 Feb 15	ETS Biology Field exam (2 hours)	<i>Science and Faith essay due</i>	<u>All</u>
Week 7 Feb 22	Vocation #1	Vocation readings/discussion Q's	All
Week 8 March 1	Student-led discussion #1	Short reading and discussion Q's	<u>Student presenters:</u>
March 6 - 10 Spring break week			
Week 9 March 15	Vocation #2	Vocation readings/discussion Q's	<u>All</u>
Week 10 March 22	Student-led discussion #2	Short reading and discussion Q's	<u>Student presenters:</u>
Week 11 March 29	Student-led discussion #3	Short reading and discussion Q's	<u>Student presenters:</u>
Week 12 April 5	No class (Day before Easter break).	<i>Day off because of 2 hour exam next week</i>	
Week 13 April 12	Inequities in science	Reading on eye color and intelligence	<u>Professor</u>
Week 14 April 19	Student-led discussion #4	Short reading and discussion Q's <i>Make sure that departmental survey is completed</i>	<u>Student presenters:</u>
Week 15 April 26	Student-led discussion #5	Short reading and discussion Q's	<u>Student presenters</u>
Week 16 May 3	Finals week - no class AND no final exam (see you at graduation!)		

ATTENDANCE

Class attendance will be kept and the school's policies will be enforced as outlined in the academic policy near the end of this syllabus. ***Since this is a participation course, your attendance is VERY important.*** You can see that attendance, participation, and attitude during these discussions are a major portion of your total grade (10%), along with the pre-reading and other methods of preparation for participating in discussions (25%). Students are expected to attend each class period. There will be no makeup opportunities for discussion or participation points. Missed assignments / classes will result in a Zero grade.

Grading: (approximate; I reserve the right to adjust percentages as appropriate)

Essay: Reflection on science & faith (evolution or env. stewardship)	100 points
Presentation for the bioethics discussion	90 points
CV and Cover letter (project and in-class discussion)	35 points
Information Literacy Assignment; Use of sources	20 points
Discussion / reading pre-questions	130 points
Class participation and attitude	50 points
ETS Exam score	25 points

GRADE		GRADE	
A	93%	C	73%
A-	90%	C-	70%
B+	87%	D+	67%
B	83%	D	63%
B-	80%	D-	60%
C+	77%	F	Below 60%

Assessment exams:

There are two assessment exams given throughout the semester. One is a one hour exam given by the University to assess either your analytical, computational, or writing skills (random per class). This will be taken during a scheduled class period.

The 2nd exam will be an ETS Major Field test in biology. This is given by the department to assess your knowledge of biology (topics include genetics, cell biology, ecology and evolution, and molecular biology). The exam is 2 hours (instead of the normal 1 hour class time-frame), so plan accordingly to attend for a longer period on that day. You can start an hour early or stay an hour later. We will have at least 2 options (dates) for you to take the exam.

You do not need to prepare far for either of these exams, and they should not cause stress. However, you should take them very seriously and do your absolute best as these exams are used to:

- 1) guide revisions of department and university curriculum to address weaknesses and learn about strengths
- 2) to provide accreditation to the university for teaching you what we claim to teach.

It is in your best interest to do well and help the university look good; since you are about to receive a diploma from PLNU, the better PLNU looks as a whole the better that diploma is perceived by career and graduate institutions. While we do not expect you to stress or largely prepare for this, you are expected to take it seriously and thus 6% of your final grade in this class is based on getting a minimum score to demonstrate that you tried and have learned a decent amount of fundamental biology. ***Students who fail to take the exam seriously and who score below a reasonable percentile will be required to complete a written analysis of a journal article to pass this course. The analysis would likely take 4-5 hours to complete.***

Science and Faith reflection essay

The reasons the biology department assigns this essay are 4-fold; we want to assess your ability to:

- 1) clearly articulate a position on an issue at the intersection of faith and science and defend that stance with concrete ideas, reasoning, and references.
- 2) use the concepts you have learned in PLNU classes & chapel, your church, or from other sources to support your position.
- 3) present an alternative view on the issue, then explain why you do not agree with this view.
- 4) write clearly (organized, relevant, and well-formatted) and appropriately for a college biology major audience. (Core competency - written communication)

Essay Assignment: Choose to answer one of the following questions:

Option 1: Do you believe that an acceptance of evolution as an explanation for biodiversity on earth can be reconciled with the Christian faith?

Option 2: For you personally, what does caring for the environment have to do with Christian faith? (**Environmental Science majors write on this topic**)

Write the essay in a 5-paragraph persuasive essay format with the purpose of communicating your position to a freshman biology major who may be struggling personally with the topic at hand (i.e. possibly written towards the freshman year version of yourself; what you would want to say to yourself about a topic you may have been struggling with at the time). Focus your essay on any particular aspect of your chosen topic, as long as you have a defendable position that, like any argumentative essay, you can defend in each paragraph through valid argumentative reasoning using scientific information that you've learned coupled with faith reflection(s) that you've had during your time here at PLNU. *More information on this assignment can be found in the assignment and grading rubric on canvas.*

Bioethical Issue Oral Presentation and Leading the Class Discussion

The reason that the biology department is asking you to do this presentation and to lead a discussion is 5-fold: we want to assess your ability to:

- 1) do an oral presentation in a professional and organized manner. (Core competency - oral communication)
- 2) use the biology concepts that you have learned to explain a bioethical issue to an audience.
- 3) choose, incorporate, and cite several relevant, current, and authoritative sources. (Core competency - information literacy)
- 4) work effectively as a member of a team.
- 5) facilitate a discussion with a group of your peers in a manner that encourages participation by everyone and respects the ideas of others.

Each group will be in charge of presenting on a bioethical topic of interest that was determined on the first day of class (although can be changed up until one week prior to presenting if the topic change is discussed with, and approved by, the instructor). The group will provide a short, relatively recent reading (usually within the last 5 years) related to the topic that will introduce the bioethical issue and provide a list of questions for students to answer prior to the class presentation and discussion. These are due to the instructor one week prior to your assigned presentation day. On the presentation day, the group will present on the topic (5-7 minutes each person), followed by leading the class in a discussion on the topic. Usually, students will have several questions that can be addressed in small groups followed by “share-outs” to the group as a whole, but you can use your creative nature to lead this however you see best.

See more detailed instructions within the assignment and grading rubric on canvas.

Class participation: The key to participation in the class discussions is to not wait until the last minute to do your reading. If you try to participate without having read the material, everyone will know (it will be obvious). This is the purpose for having the pre-discussion questions/material due the Monday prior to our discussion—so that you can reflect on the material and actively take part in the dialog on Wednesday evening.

My evaluation will be on quality of participation, preparation, and presentation skills, as well as participation in the discussion that demonstrates good civil discourse and respect to all, including those with a different opinion from yours. However, my grading will in no way be based on positions that you take during the various discussions. You should feel totally free to speak your mind and back up your opinions with good reasoning. My main goal is to challenge you to think critically as you approach scientific issues as they interface with faith and life. ***I may interject with certain scientific facts, offer my own views, or challenge your views, to help strengthen your own understanding, not to force you to believe a certain way.***

PLNU Undergraduate Syllabus Notification Page

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 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 (★)

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See [Disability Resource Center](#) for additional information.

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.