

<p><b>Meeting days:</b> Five Mondays during semester</p> <ul style="list-style-type: none"> <li>• January 10</li> <li>• January 31</li> <li>• February 28</li> <li>• April 4</li> <li>• April 25</li> </ul>	<p><b>Instructor:</b> Dr. Jen Lineback, Professor of Biology &amp; Education</p>
<p><b>Meeting times:</b> 5:30-8:00pm</p>	<p><b>Phone:</b> 619-849-2974 (office)</p>
<p><b>Meeting location:</b> LA 2</p>	<p><b>Email:</b> JenLineback@pointloma.edu</p>
<p><b>Final Exam:</b> Take home, due M 5/2 by 11:59pm</p>	<p><b>Office location and hours:</b></p> <ul style="list-style-type: none"> <li>• By appointment (ZOOM or in-person)</li> </ul>

**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.

**COURSE DESCRIPTION**

BIO 6011 – Learning in Science (3)

This course involves discussion and integration of seminal papers in the area of learning theory, with applications in a variety of scientific research, business, and educational settings. Predominantly on-line course delivery.

**PURPOSE OF THE COURSE**

The science education seminar is intended to provide opportunities for biology graduate students to examine learning theories from a variety of perspectives and explore current trends in educational research.

Teaching and learning in science is a means of impacting other people by leading them into an opportunity to learn about the natural world. As a Christian university, PLNU approaches this study of God’s creation with a sense of reverence and awe that distinguishes this university from others.

### **COURSE LEARNING OUTCOMES:**

- Students will compare and contrast the major theories in the field of science education.
- Students will classify both current and seminal papers from top-tier science education journals in terms of their theoretical perspective.
- Students will describe current areas of research in science teaching and learning and identify the theoretical perspectives informing studies in these areas.
- Students will articulate the relevance of learning theory to their own area of study.

### **COURSE CREDIT HOUR INFORMATION**

This course is an example of a “hybrid” course. According to the PLNU catalog: “Hybrid or Blended courses use online and face to face delivery. A substantial portion of the content (between 26% and 79%) is delivered online, and it typically uses online discussion and has a reduced number of face-to-face meetings.”

During the 15 weeks of the semester, you will be required to read articles, participate in the group-threaded discussions online, and submit individual answers to questions about the articles. Since this is a 3-unit course, it is expected that students will spend approximately 8-10 hours each week reading the articles and answering questions, both in the discussion format (online most weeks) and as answers submitted to the instructor. *I highly recommend you carve out two or three large chunks of time during your week to be able to complete the work in 9 hours.* For example, three 3-hour blocks during the week. I have found that students that try to “squeeze in” an hour here and there during the week tend to spend 12 or more hours each week because they have to spend time repeating/reviewing reading that they had already completed.

### **REQUIRED TEXTS/RESOURCES**

Some of the readings chosen for this course are either articles that are too old to be available electronically, or they come from journals to which the library does not have free access, or they are single chapters from books. For these reasons, a packet containing many of the readings for the course is available for purchase at: Cognella®.

- BIO 6011 – Spring 2022 Course Reader, available through Cognella®  
<https://store.cognella.com/24041>

Any articles that are available through our library website, or are open-access, are not included in the reader. You will, instead, access these through the PLNU library (or via Google Scholar). I will provide you with more information as to how to do this during our first in-person class meeting.

### **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.

### **ASSESSMENT AND GRADING**

Grades will be determined by:

- |                                                                               |     |
|-------------------------------------------------------------------------------|-----|
| 1. article/chapter writing assignments (assigned weekly)                      | 20% |
| 2. consistent and meaningful participation in online discussions (see rubric) | 20% |
| 3. collaborative group project                                                | 20% |
| 4. written exams (midterm and final)                                          | 40% |

At the end of the semester, a letter grade for the course will be based on the following scale:

<b>A</b> 93- 100%	<b>A-</b> 90- 92%	<b>B+</b> 87- 89%	<b>B</b> 83- 86%	<b>B-</b> 80- 82%	<b>C+</b> 77- 79%	<b>C</b> 73- 76%	<b>C-</b> 70- 72%	<b>D</b> 60- 69%	<b>F</b> Below 59%
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### **ARTICLE/CHAPTER WRITING ASSIGNMENTS (WAs)**

Since this is a graduate class, it is essential that you take responsibility for your own learning. Keep in mind that some of the readings are long, and I am not expecting that you necessarily understand every detail in the paper, but rather to determine the main ideas that the author is trying to communicate. You will be writing responses to questions that I hope will stimulate thought about ideas in the articles and will encourage you to reflection upon how this new information relates to your prior knowledge. It will be helpful to read the questions before you read the papers. The answers will not be found in the paper, but rather will be constructed by you in response to what you read.

While either I or my grader (Heather) will make a few comments on your paper, please understand that the majority of your learning occurs in the *process* of your production of the document. I expect that all written assignments be of graduate-level quality (no typos, no grammatical errors, no sentence fragments, thoughtful development of ideas, etc.). To earn full credit on written assignments, you must answer every part of each question in a well-written answer that demonstrates thought and integration of ideas.

### **LATE ASSIGNMENTS**

Assignments must be turned in by the due dates listed in the schedule below. Assignments more than 48 hours late will automatically be scored as a C or lower. If any assignments are missing on the “last date to drop the course”, you will be automatically dropped from the course, and you will have to retake next spring. This drop date is: **March 6, 2022.**

### **ONLINE DISCUSSION BOARDS (DBs)**

For most weeks, discussion questions on the assigned reading for the week will be posted on Canvas. You are expected to post and respond to each prompt according to the following deadlines:

- First deadline: **Thursday**, by midnight
- Second deadline: **Sunday**, by midnight

For example: Do your reading for the week prior to **Thursday**. Go on the discussion board before **Thursday** at midnight and post a response to each prompt. Before **Sunday** at midnight, respond to at least two of your fellow students’ comments. This should help to ensure that there is healthy, active discussion going on each week. Feel free to respond as frequently as you like; these guidelines are minimum requirements.

Since we will have limited opportunities to interact in person, the quality of the online discussion is very important. Responses should reflect an understanding of the material, as well as thoughtful consideration of the importance, validity, and value of the content being discussed. Various viewpoints are valued, and encouraged. Discussion question responses that you would like me to count toward the grade for this course should be at least 100 words but less than 350 words. This policy applies to all three of your required responses per week in the discussion forum. Shorter comments to other students are welcome for the benefit of your learning and theirs. A rubric for scoring your discussion board participation is included below.

The discussions, both online and in person, will focus on the main ideas in the papers as they relate to your own teaching practice. I am looking for thoughtful, reflective responses that demonstrate evaluation of ideas. It is essential to the success of the class that each class member contributes valuable content and responds to others students' valuable content frequently. It is important that all participants stay on-topic. This means bringing up personal experience that helps to provide examples, comparisons, etc., but the discussions should not become a forum for "venting."

**PLNU Grad Biology Weekly Online Discussion Rubric**  
Full credit = 10 points each week

	<b>Initial (1 pt)</b>	<b>Emerging (2 pts)</b>	<b>Developed (3 pts)</b>
Promptness and initiative	Posts 1 <sup>st</sup> response late AND responds late to others' posts. Responses are extremely short.	Posts 1 <sup>st</sup> response to prompt(s) on time, OR posts 2 <sup>nd</sup> response to at least two students on time. Minimum of 50 words each time.	Posts 1 <sup>st</sup> response on time AND responds to at least 2 others' posts on time. Minimum of 100 words each.
Relevance of post	Posts responses which slightly relate to the discussion topic; makes short or irrelevant remarks.	Posts responses that are related to discussion content and connects to reading material; often prompts further discussion.	Posts relevant responses that show <i>integration</i> and <i>application</i> of course material. May pose additional relevant questions.
Mechanics	Posts/responses contain several major errors related grammar, spelling, and sentence structure that make the posts/responses difficult to read and understand.	Posts/responses contain several minor errors related grammar, spelling, and sentence structure, but are easy to read and understand.	Posts/responses contain very few, if any, minor errors related grammar, spelling, and sentence structure. Posts/responses are easy to read and understand.
Observation of "Netiquette": not using ALL CAPS, slang or potentially inflammatory or overly emotional language	Does not observe 'Netiquette' guidelines  <b>0 points</b>	Observes 'Netiquette' guidelines  <b>1 point</b>	

### BIO 6011 - Tentative Weekly Schedule

Note that this is a tentative schedule of the readings, assignments, and due dates for the course. Further assignment details will be provided each week on the Canvas website under "Assignments".

Date	Topics to be discussed	
<b>1/10/22</b>	<b>In-Person Meeting #1</b>	<b>5:30-8:00pm, LA 2 Topic: Introduction to Learning Theories, Behaviorism</b>
*1 - 1/10/22 2 - 1/17/22 3 - 1/24/22	Topics	Traditional Learning Theories: Behaviorism, Classic Constructivism, Constructivism in Practice
	Assignments	Readings, written responses to questions & discussion board
<b>1/31/22</b>	<b>In-Person Meeting #2</b>	<b>5:30-8:00pm, LA 2 Topic: Consideration of Traditional Learning Theories</b>
*4 – 1/31/22 5 - 2/7/22 6 - 2/14/22 7 - 2/21/22	Topics	“Misconceptions,” Situated Cognition, Social-Culturalism
	Assignments	Readings, written responses to questions & discussion board
<b>2/28/22</b>	<b>In-Person Meeting #3</b>	<b>5:30-8:00pm, LA 2 Topic: Cross Theory Analysis; Introduce Midterm &amp; NEXT</b>
*8 – 2/28/22	Assignment	<b>Midterm Exam – DUE 3/14/22 by midnight</b>
		NOTE: You will <u>not</u> have a reading assignment this week. Instead, you will be asked to synthesize across the information that you have learned so far in this course.
9 - 3/14/22 10 - 3/21/22 11 – 3/28/22	Topics	Adult Learning Theories
	Assignment	Readings, written responses to questions, & discussion board.
<b>4/4/22</b>	<b>In-Person Meeting #4</b>	<b>5:30-8:00pm, LA 2 Topic: Discuss Adult v. Traditional LT; Introduce Project</b>
*12 - 4/4/22 13 - 4/11/22 14 - 4/18/22	Topics	Current Science Education Research Topics
	Assignment	Readings, written responses to questions, & discussion board.
<b>4/25/22</b>	<b>In-Person Meeting #5</b>	<b>5:30-8:00pm, LA 2 Topic: Group Project Presentations; Introduce Final Exam</b>
*15 - 4/25/22	Assignment	<b>Final Exam – DUE 5/2/2022 by midnight</b>

\* denotes a week with an in-person meeting

## Links to Additional PLNU Policies:

### **ACADEMIC ACCOMMODATIONS**

Pursuant to Section 504 of the Rehabilitation Act and other applicable laws, PLNU prohibits discrimination and harassment against a qualified individual with a disability. While all students are expected to meet the minimum standards for completion of each course as established by the instructor, students with disabilities may request academic adjustments, modifications or auxiliary aids/services. The PLNU Educational Access Center (EAC), located in the Bond Academic Center ([EAC@pointloma.edu](mailto:EAC@pointloma.edu) or 619-849-2533), is the point of contact for disability issues for all PLNU undergraduate and graduate students, including students enrolled at the Mission Valley Campus and College of Extended Learning students enrolled in PLNU courses at Community College satellite campuses. Current and prospective students seeking accommodation must follow the reasonable accommodation procedures which may be found on the [EAC website](#).

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 EAC 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.

### **ACADEMIC HONESTY**

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.

### **ATTENDANCE 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. Absences are counted from the first official meeting of the class regardless of the date of the student's enrollment. If more than twenty percent of the classes are reported as missed, the faculty member may initiate the student's de-enrollment from the course without advance notice to the student. For the 2021-2022 academic year, if absences exceed twenty (20) percent of the total number of class meetings but are due to university excused health issues, an exception will be granted. If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of "F" or "NC." There are no refunds for courses where a de-enrollment was processed.

A student who registers late must, therefore, be exceptionally careful about regular attendance during the remainder of the course. Registered students who neither attend the first class session nor inform the instructor of record of their desire to remain in the class may, at the request of the instructor, be removed from the class roster.

Exceptions to the foregoing attendance regulations due to extenuating circumstances beyond the student's control may be granted only by appeal to the Vice Provost for Graduate and Professional Studies. Students should consult the syllabus of each course for specific applications of and elaborations on the above attendance policy.

### **EDUCATION RECORDS (FERPA) and DIRECTORY INFORMATION**

FERPA is the federal law regarding the privacy of student records.

### **SPRITUAL CARE/RESOURCES**

PLNU strives to be a place where you grow as a whole person. This link provides you with resources and email contacts in this regard.