POINT 1902 LOMA
NAZARENE UNIVERSITY

Department of Physics and Engineering

EGR 4072 – Senior Project I

2 Units

Fall 2026

Meeting days/times: Wednesdays, 6:00-7:50 PM

Meeting location: Rohr Science 365

Final Exam: Monday, 12/14, 4:30-6:30 PM (to be confirmed)

Instructor Title and Name: Prof. Brian Zark
Phone: (619) 849-2219
Email: BrianZark@pointloma.edu
Office Location and Office Hours: Before or after class or by Zoom, please make an 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.

Department Mission

The Department of Physics & Engineering provides strong programs of study that aid in ensuring our students are well prepared for both graduate studies and careers in a variety of scientific and engineering fields. We emphasize a collaborative learning environment that allows students to thrive academically, build personal confidence, and develop interpersonal skills, while providing a Christian setting for students to learn values and judgment and pursue integration of modern scientific knowledge and Christian faith.

Course Description

This course provides students (teams) with the opportunity to design and build a prototype of a project. The students will give an oral presentation of their project in a design review setting. This course will normally be completed in a student's senior year.

Program and Course Learning Outcomes

The Program Learning Outcomes (PLOs) assessed in this course are:

- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- An ability to communicate effectively with a range of audiences (CC: OC, WC, IL)
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Required Texts and Recommended Study Resources

No textbooks are required for this course.

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 2-unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an estimated minimum 75 total hours meeting the course learning outcomes.

Assessment and Grading

This course seeks to prepare students for their engineering careers through self-directed, project-based learning, with an emphasis on professionalism. By completing an engineering design project with minimal oversight, students will continue to develop the skills they will need to be successful in a professional setting. As such, assigned grades will reflect the approximate quality, completeness, and timeliness of deliverables expected of an entry-level, junior engineer. Graded project deliverables include the following:

- **Preliminary Work (2%):** You will have a few preliminary tasks that include a start of the class survey, response about what you can contribute to each project and team contract.
- **Project Proposal (15%):** At the start of the term, each project team will prepare a project proposal for the first semester of the year-long design project. The proposal must include a detailed schedule with at least three major milestones and specific weekly tasks, designed to reach each milestone on time. The draft proposal will be peer-reviewed during class time and feedback from peers, the instructor, the faculty mentor, and the client must be incorporated in the final version. By formally defining the testing plan and other tasks, this document will help students set appropriate goals, evaluate their progress throughout the term, and ensure the

timely delivery of prototype designs to the client. Grading for the assignment will be based on the completeness, quality, and on-time submittal of both the draft and final versions.

- **Progress Report (5%):** Each project team will prepare a written, formal progress report, due Week 8 of the term. Class time will be given for peer review of the draft progress reports. The progress reports will give students an opportunity to formally evaluate and present their progress, practice their technical writing skills, and become familiar with a tool frequently used in industry. Grading for the assignment will be based on the completeness, quality, and on-time submittal of both the draft and final versions.
- **Final Report (20%):** Each project team will prepare a publication-quality report, due on the last day of the regular term, describing the work completed during the term. The draft-final report sections will be peer-reviewed during class time and feedback must be incorporated in the final version. Grading for the assignment will be based on the completeness, quality, and on-time submittal of both the draft and final versions and the comment responses.
- **Final Presentation (15%):** The entire class will present the work completed during the term during the final exam session, in a combined presentation. Each project team will be responsible for presenting their work as part of the single presentation. Students will have an opportunity to practice the final presentation in class during the last week of the regular term and receive feedback, though only the final presentation will be graded. The presentations will be open to PLNU students, faculty, and professional community members to attend. Grading for the assignment will be based on formal evaluation of both the presentation visuals (e.g., slides) and oral delivery, including appropriate responses to audience questions.
- **Weekly Performance Evaluations (30%):** For 10 weeks following completion of the proposal (Weeks 5-12 and 14-15; 10 weeks total), each team's performance will be evaluated based on their work on that week's planned tasks, as defined in their proposal. This will support each team in completing a functional, detailed prototype by the end of the term. Student performance will be evaluated by the faculty mentor during a weekly meeting with each team. Grading will be based on the completeness, quality, and on-time completion of assigned tasks.
- **Course Participation (13%):** At the end of the term, each student will receive a single course participation grade reflecting their individual contributions to both the group learning environment and written group deliverables submitted throughout the term. Grades will be determined based on peer evaluations, a faculty mentor evaluation, a professor evaluation, and an individual technical writing evaluation.

Except where indicated, project deliverables will be submitted and graded on a group basis, meaning that students will receive the same score for group assignments. This is intended to reflect the realities of both industry and academia. However, each student is expected to substantially contribute to all deliverables; please note that students cannot pass the course based on group deliverables alone.

Students are expected to arrive on time and prepared for class sessions and planned team meetings outside of class. Most weeks, class sessions will include a brief, informal oral progress report by each project team to describe progress made and to solicit feedback from the instructor and peers. Some weeks, class time will be dedicated to peer review of draft documents (e.g., proposals, report sections, etc.). Students are expected to support each other in the learning process by asking thoughtful questions and providing constructive and respectful written and oral feedback during class sessions. Outside of class, teams are expected to meet weekly with the Faculty Mentor, Dr. José Manjarrés, who is available as a resource to provide project management and technical support. Teams are expected to develop and commit to a team contract outlining expectations for all members, then honor those commitments throughout the semester. Please note that all activities contributing to the Course Participation grade are designed to directly benefit students by supporting them in the on-time delivery of excellent projects.

Point Distribution:

Preliminary Work	2%
Project Proposal	15%
Progress Report	5%
Final Report	20%
Final Presentation	15%
Weekly Meetings	30%
Course Participation	13%
Total	100%

Grades will be based on the following:

Sample Standard Grade Scale Based on Percentages

A	B	C	D	F
A [92.5-100]	B+ [87.5-90)	C+ [77.5-80)	D+ [67.5-70)	F [0-60)
A- [90-92.5)	B [82.5-87.5)	C [72.5-77.5)	D [62.5-67.5)	
	B- [80-82.5)	C- [70-72.5)	D- [60-62.5)	

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam 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, no requests for alternative final examinations will be granted.

Incompletes and Late Assignments

All assignments are to be submitted by the due dates. Assignments will be considered late if submitted after the indicated due date and time. Late assignments will receive a grade of 0, except in extremely unusual circumstances and at the instructor's discretion. Note: If, due to extreme circumstances, students foresee that they will not be able to submit an assignment on time, they must inform the instructor and discuss options as early as possible. Extensions will not be considered when failure to meet a deadline is coupled with poor communication.

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.

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.

Additional Course Information

Additional PLNU policies and practices that apply to this course can be found at the following link: https://docs.google.com/document/d/1SoL5YMfCv_5cobhBwrDjbcZJzNKKTCfM/edit?usp=sharing&ouid=104297418648613020764&rtpof=true&sd=true

Assignments At-A-Glance (in table form)

Week	Date	In Class	Mini-lecture Topic	Items Due	Milestone
1	9/2/2026	Introductions, syllabus, project overview, teams/contracts	Engineering Design Process	Entrance survey (by Sept. 5)	Projects Introduced
2	9/9/2026	Work on proposal/discuss with professor and peers	Project Proposals What are Engineering Standards?	Team contract (before class)	Teams formed Key questions identified, lit review started
3	9/16/2026	Peer review, edit, and combine proposal sections	Task Management Tools How to Find Engineering Standards	Draft proposal (before class)	Lit. review complete, approaches determined
4	9/23/2026	Present proposal and timeline	Design for Manufacturing	Proposal (before class)	Proposal submitted to AgInno and NIWC for feedback
5	9/30/2026	Work on project/discuss with professor and peers	Using Engineering Standards		

6	10/7/2026	Work on project/discuss with professor and peers	Progress Reports		
7	10/14/2026	Peer review progress reports		Draft progress report (before class)	
8	10/21/2026	Present progress reports		Progress report (before class)	Parts orders approved
9	10/28/2026	Work on project/discuss with professor and peers	Technical Writing/Engineering Reports		Initial design complete, construction started
10	11/4/2026	Work on project/discuss with professor and peers	Presentation Skills		Report outlined, writing sections
11	11/11/2026	Work on project/discuss with professor and peers	Data Analysis Techniques		
12	11/18/2026	Work on project/discuss with professor and peers			

13	11/25/2026	Thanksgiving (No Class)			
14	12/2/2026	Team evaluations/Technical writing sample Peer review reports		Draft report (before class)	
15	12/19/2026	Practice presentation with peer feedback		Final report (end of week)	Prototype complete and functional
16	12/14/2026	Final presentation (4:30-6:30 PM) **Pending Confirmation**		Presentation slides (end of class)	

Assignments:

Date	Details	Due
Sun Sep 6, 2026	Assignment Contributions to Each Project	due by 11:59pm
	Assignment Entrance Survey	due by 11:59pm
Wed Sep 9, 2026	Assignment Team Contract	due by 6pm
Wed Sep 16, 2026	Assignment Draft Project Proposal	due by 6pm
Wed Sep 23, 2026	Assignment Final Project Proposal	due by 6pm
Wed Oct 14, 2026	Assignment Draft Progress Report	due by 6pm
Fri Oct 16, 2026	Assignment Weekly Performance Evaluation 3 - Week 7	due by 11:59pm
Wed Oct 21, 2026	Assignment Final Progress Report	due by 6pm

Date	Details	Due
Fri Oct 23, 2026	Assignment Weekly Performance Evaluation 4 - Week 8	due by 11:59pm
Fri Oct 30, 2026	Assignment Weekly Performance Evaluation 5 - Week 9	due by 11:59pm
Fri Nov 6, 2026	Assignment Weekly Performance Evaluation 6 - Week 10	due by 11:59pm
Fri Nov 13, 2026	Assignment Weekly Performance Evaluation 7 - Week 11	due by 11:59pm
Fri Nov 20, 2026	Assignment Weekly Performance Evaluation 8 - Week 12	due by 11:59pm
Wed Dec 2, 2026	Assignment Draft-final Report	due by 6pm
Fri Dec 4, 2026	Assignment Weekly Performance Evaluation 9 - Week 14	due by 11:59pm
Fri Dec 11, 2026	Assignment Final Report	due by 11:59pm
	Assignment Weekly Performance Evaluation 10 - Week 15	due by 11:59pm

Date	Details	Due
Mon Dec 14, 2026	Assignment Final Presentation	due by 6:30pm
Fri Dec 18, 2026	Assignment Course Participation	due by 6:30pm