POINT 1902 LOMA
NAZARENE UNIVERSITY

Physics and Engineering, School of STEM

EGR 1003/1003L – Introduction to Engineering I

Number of Units: 2+1

Fall 2026

Meeting days/times

(Lecture R 10:30 am – 12:15 pm)

(Labs: T 7:25am - 10:15am and T 1:30pm – 4:20pm)

Meeting location (Rohr Science (RS) 295)

Final Exam: (Thursday, 12/17, 10:30am – 1:00 pm)

Instructor Title and Name: Dr. Anthony Cotez
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Instructor Title and Name: Dr. Paul Schmelzenbach
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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 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

An introduction to engineering as a career, including problem solving, engineering disciplines, design, teamwork, and communication. Introduction to multiple tools/techniques used by engineers, including data analysis, numerical methods, error analysis, and the use of computers for solving problems in physics and engineering.

Program and Course Learning Outcomes

Through this course students develop skills so they will be able to:

1. Understand the basics of the engineering profession, including problem solving, design, teamwork, and creativity.
2. Develop skills in communicating complex and technical ideas.
3. Understand key ideas of how to use Excel as a tool to solve problems and communicate data in science and engineering.
4. Become proficient at using Python, including writing files and correcting or modifying existing code.
5. Learn fundamental skills for group collaboration, as well as lab and project execution/documentation/demonstrations.
6. Address the role that artificial intelligence has in engineering.
7. Understand how to utilize a microcontroller to solve certain engineering problems.

STUDENT OUTCOMES ADDRESSED

Students will have:

1. an ability to communicate effectively with a range of audiences. (LO3)
2. 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. (LO5)
3. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions (LO6)

Required Texts and Recommended Study Resources

Students are responsible for having the required course textbooks prior to the first day of class.

All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

1. *Access to Python*
2. *Access to Microsoft Word PowerPoint, and Excel*
3. *Arduino Kit*

Assessment and Grading

Grades will be based on the following:

- **Homework/Assignments**: There will be assigned Homework/Assignments to keep you on track with the Mini Projects. Some of these will be submitted as a team and some will be submitted individually.
- **Mini Projects**: You will be completing small projects for hands-on use of the tools/techniques we are learning in class. This will be completed in the lab scheduled time.
- **Team Project**: The class will culminate with a Team Project where you will combine the techniques/tools you learned from lecture to complete a project. This project will then be presented to the class.
- **Examinations and the Final Examination**. Examinations and the Final Examination will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class. No examination shall be missed without prior consent or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

Sample Standard Grade Scale Based on Percentages

Standard Grade Scale Based on Percentages					
	A	**B**	**C**	**D**	**F**
+		87.5- 89.5	77.5-79.5	67.5-69.5	
	91 -100	81-87.5	71-77.5	61 -67.5	0-57
_	89.5-91	79.5-81	69.5-71	57-61	

Grading Distribution	Percent
Team Final Project	25
Mini Projects	20
Midterm Exams	20
Final Exam	20
Homework/Assignments	15
Total	100

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/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Late assignments will receive a score of zero.

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

Tentative Schedule (Subject to Updates)

Date	Topic
Week 1	Lab 1 – Explore Engineering Careers
	Intro/Engineer
Week 2	Lab 2 – Think like an Engineer
	Excel I
Week 3	Lab 3 – Excel I
	Excel II
Week 4	Lab 4 – Excel II
	Python Intoduction
Week 5	Lab 5 – Python I
	Python II – Matrix Applications

Week 6	Lab 6 – Python II
	Python III - Plotting
Week 7	Lab 7 – Python III
	Exam 1 Theory
Week 8	Exam 1 Lab Application
	Fall Break – No Class
Week 9	Lab 8 Intro to Arduino/Circuits Lab
	Arduino I
Week 10	Lab 9 – Arduino I
	Arduino II
Week 11	Lab 10 – Arduino II
	Arduino III
Week 12	Final Project
	Final Project
Week 13	Final Project
	Thanksgiving Break – No Class
Week 14	Final Project
	Final Project
Week 15	Final Project
	Final Project Presentation/Demo
Final Exam	Thursday 12/17 at 10:30am