



Physics and Engineering

EGR 1023/1023L – Introduction to Engineering II and Lab

Number of Units: 2+1

Spring 2025

Meeting days/times: Lecture: R 1:30 pm – 3:20 pm | Lab: T 3:00-5:50pm

Meeting location: Rohr Science (RS) 265

Final Exam: Thursday, 05/08, 1:30 – 4:00 pm

INFORMATION	SPECIFICS FOR THE COURSE
Instructor title and name:	Dr. Anthony Cortez
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Office location and hours:	Rohr Science 282 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.

Course Description

EGR 1023 – Introduction to Engineering II (2)

An introduction to the engineering design process building on the tools introduced in EGR 1012. In addition to designing a prototype, students learn the engineering aspects of teamwork development, ethics, professionalism, and reporting.

Prerequisite(s): EGR 1012 with a grade of C- or higher.

Corequisite(s): EGR 1023L – Introduction to Engineering II Lab (1)

EGR 1023L – Introduction to Engineering II Lab (1)

Laboratory to compliment EGR 1023. Meets three hours per week.

Prerequisite(s): EGR 1012 with a grade of C- or higher.

Corequisite(s): EGR 1023

Program and Course Learning Outcomes

Course Learning Outcomes:

1. Understand the basics of the engineering profession, including problem solving, design, teamwork, creativity, and ethics.
2. Apply engineering design to produce solutions that meet specified needs.
3. Develop skills in solid geometry model creation in software like SOLIDWORKS.
4. Develop skills in prototyping using techniques such as the practice of basic additive manufacturing using 3D printing.
5. Develop skills in presenting work/projects orally.
6. Operate introductory engineering tools/equipment safely in the lab setting (for example 3D printers and laser cutters).

The PLOs assessed in this class are:

- An ability to apply recognize ethical and professional responsibilities and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (LO4)
- 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)
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (LO7)

The Signature Assignment for assessing these PLOs are homework, team self-assessment rubrics, and mini-projects.

Required Texts and Recommended Study Resources

1. Access to MATLAB
2. Access to SOLIDWORKS

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.

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+1 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 112.5 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

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 creating a mini project using the engineering design process for each new tool/technique we are learning in class.
- **Team Project:** The class will culminate with a Team Project where you have the freedom to choose which technique/tool you learned from lecture to complete a project. This project will then be presented to the class.

Grading Distribution	Percent
MiniProjects	40
Homework/Assignments	30
Final Team Project	30
Total	100

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	

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 posted after the due date and time using Pacific Standard Time. Late assignments will receive a grade of 0.

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 (EAC@pointloma.edu or 619-849-2486). 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. The EAC makes accommodations available to professors at the student's request.

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 special accommodations.

Tentative Schedule (Subject to Updates)

Date	In Class	Items Due	Project
Week 01	What is Design Process?	Initial Ideas on Engineering	
Week 02	Intro SolidWorks	Basic SolidWorks Design	SolidWorks
Week 03	SolidWorks Features	SolidWorks Features Design	SolidWorks
Week 04	Research and Plan/Create	Approved Plan	SOLIDWORKS
Week 05	Create and Test	Final Design	SOLIDWORKS
Week 06	Intro 3D Printer	SOLIDWORKS Report	3D Printer
Week 07	Research and Plan/Create	Approved Plan	3D Printer
Week 08	Create and Test	Printed Object	3D Printer
Week 09	Intro Laser Cutter	3D Printer Report	Laser Cutter
Week 10	Research and Plan	Approved Plan	Laser Cutter
Week 11	Create and Test	Printed Cut	Laser Cutter
Week 12	Intro CNC/Soldering Team Project Initial Ideas	Laser Cutter Report Team Project Plan Approved	CNC/Soldering
Week 13	Create and Test	CNC/Soldering	CNC/Soldering
Week 14	Work on Project	CNC/Soldering Report & Project Plan Approved	Team Project
Week 15	Work on Project		Team Project
Finals Week	Final Presentations	Final Report	

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/18i1pUoY0iCfB8w7JKxVvACQW309X-JRB/edit?usp=sharing&ouid=116164865489739533893&rtpof=true&sd=true>