



Physics and Engineering

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

Number of Units: 2+1

*Spring 2024*

**Meeting days/times**

**Lecture: (R 1:30 pm – 3:20 pm)**

**Lab: (T 5:15pm – 8:05pm)**

**Meeting location**

**Lecture: (Rohr Science Hall 265 (RS 265))**

**Lab: (Rohr Science Hall 265 (RS 265))**

<b>Instructor title and name:</b>	Dr. Anthony Cortez Prof. Joey Tuttobene
<b>Phone:</b>	(619) 849-2439
<b>Email:</b>	<a href="mailto:AnthonyCortez@pointloma.edu">AnthonyCortez@pointloma.edu</a> <a href="mailto:JosephTuttobene@pointloma.edu">JosephTuttobene@pointloma.edu</a>
<b>Office location and hours:</b>	Office Hours: MF: 9:30-10:30am R: 8:45-9:45am By Appointment  Location: Rohr Science 282

**Final Exam: (Thu, 5/2, 1:30 – 4:00 pm)**

## **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 Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

## **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).

Student Outcomes Addressed:

- 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)

### **Required Texts and Recommended Study Resources**

1. Access to MATLAB
2. Access to SOLIDWORKS

### **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.

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

<b>Standard Grade Scale Based on Percentages</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>
+		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 [Class 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.

## **Spiritual Care**

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If students have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

## **State Authorization**

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

## **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**

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center ([EAC@pointloma.edu](mailto:EAC@pointloma.edu) or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

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 and/or if they do not wish to utilize some or all of the elements of their AP in that course.

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.

## **Sexual Misconduct and Discrimination**

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at [pointloma.edu/Title-IX](http://pointloma.edu/Title-IX). Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at [counselingservices@pointloma.edu](mailto:counselingservices@pointloma.edu) or find a list of campus pastors at [pointloma.edu/title-ix](http://pointloma.edu/title-ix).

## **PLNU Attendance and Participation Policy**

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of 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 an "F" grade.

### Tentative Schedule (Subject to Updates)

<b>Date</b>	<b>In Class</b>	<b>Items Due</b>	<b>Project</b>
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	

	Thu May 2		
--	-----------	--	--