	Department of Physics and EngineeringEGR1012/L - Introduction to Engineering I** 1+1 units**
Fall 2020 | August 17-December 4	

Instructor: Dr. Paul D. Schmelzenbach
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Office hours: By appointment as needed.

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 Physics and Engineering Department at PLNU provides strong programs of study in the fields of Physics and Engineering. Our students are well prepared for graduate studies and careers in scientific and engineering fields. We emphasize a collaborative learning environment which allows students to thrive academically, build personal confidence, and develop interpersonal skills. We provide a Christian environment 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.

COURSE LEARNING OUTCOMES

1. understand the basics of the engineering profession, including problem solving, design, teamwork, creativity, and ethics.
2. develop skill in communicating complex and technical ideas
3. acquire skills to learn how to develop solutions for certain kinds of physics and engineering problems using computational techniques
4. understand key ideas of how to use Excel as a tool to solve problems and communicate data in science and engineering
5. become proficient at using MATLAB, including writing .m files and correcting or modifying existing code.
6. understand how to utilize a microcontroller to solve certain engineering problems

PROGRAM OUTCOMES: This course contributes to meeting the program outcomes by developing student skills in the following areas. Students will have

1. an ability to apply knowledge of mathematics, science, and engineering;
2. an ability to design a system, component, or process to meet desired needs within realistic; constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
3. an understanding of professional and ethical responsibility;
4. an ability to communicate effectively;
5. a recognition of the need for, and an ability to engage in life-long learning;
6. an ability to use the techniques, skills, and modern engineering tools necessary for engineering

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Note:

1. Access to MATLAB (Links to an external site.) (recommended purchase at least the basic $50 license which will last as long as you are a student)
2. Access to Excel
3. Arduino kit (minimum here (Links to an external site.), or if you want some extras to play with later or possibly for use with your project, here (Links to an external site.) is a bit more)

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 sixteen weeks. Specific details about how the class meets the credit hour requirement can be provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

Category	Time Expectation in Hours
Reading/Intro Videos	13
Lab Projects	41
Practice Tutorials	12
Team Collaboration	14
Quizzes, Tests	5
Total Hours	85

ASSESSMENT AND GRADING

Graded Components

- **Projects** are a major component of this class. I encourage collaboration between you and your peers while working on tasks and projects, but your work you say is your own must be your own. The guideline is: you should never have any trouble explaining your work. A final project will provide some constraints and parameters but will allow you considerable more freedom to demonstrate the skills you have developed through the semester.
- **Team Notebook**: Each of the projects will have a component involving a more significant amount of teamwork. An electronic notebook will be created and shared between group members and submitted each week.
- **Videos and Questions**: Each section will have content such as a video to watch and to complete the assignment you will answer embedded questions.
- **Exams**: Two tests will be given during the semester allowing you to demonstrate your understanding of what you have been learning. 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.
- **Late work will not be accepted** without prior consent or a well-documented emergency. Up to a maximum of one project assignment will be accepted up to 3 days late provided that consent is received from the professor before it is due. Projects that are submitted late without prior consent will be recorded with a score of zero. The lowest project score (with the acception of the final) will be dropped from the calculations of the final grade.

Grading Distribution	Percent
Projects	45
Team Notebook	15
Video Questions	5
Final Project	15
Tests (2)	20
Total	100

Grading Scale

Approximate minimal percentages required to obtain a given grade are:

Standard Grade Scale Based on Percentages					
	A	**B**	**C**	**D**	**F**
+		87.5-90	77.5-80	67.5-70	
	92.5-100	82.5-87.5	72.5-77.5	62.5-67.5	0-60
_	90-92.5	80-82.5	70-72.5	60-62.5	

STATE AUTHORIZATION – only if the class is online

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.

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. Incompletes will only be assigned in extremely unusual circumstances.

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 PoliciesLinks to an external site. for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

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 DRC 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.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in 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 the appropriate grade for their work and participation. See Academic PoliciesLinks to an

external site. for further information about class attendance.

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 the Office of Spiritual Development Links to an external site.

Course Summary:

Date	Details	
Mon Aug 17, 2020	Page Week 1: Course Orientation and Welcome	to do: 11:59am
Page Week 1: Overview	to do: 12:30pm	
Page Home Page | Quick Links to Resources	to do: 11:59pm	
Page Meet Your Instructor	to do: 11:59pm	
Page Syllabus	to do: 11:59pm	
Tue Aug 18, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Wed Aug 19, 2020	Assignment Week 1 Video	due by 5pm
Thu Aug 20, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment (mini) project: create Introduction	due by 11:59pm	
Fri Aug 21, 2020	Assignment Team Notebook 1	due by 11:59pm
Mon Aug 24, 2020	Page Week 2: Overview	to do: 11:59pm
Assignment Week 2 Video	due by 11:59pm	
Tue Aug 25, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Aug 27, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm

Assignment Project: Excel 1	due by 11:59pm	
Fri Aug 28, 2020	Assignment Notebook 2	due by 11:59pm
Mon Aug 31, 2020	Page Week 3: Overview	to do: 11:59pm
Assignment Week 3	due by 11:59pm	
Tue Sep 1, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Sep 3, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: Excel 2	due by 11:59pm	
Fri Sep 4, 2020	Assignment Notebook 3	due by 11:59pm
Mon Sep 7, 2020	Page Week 4: Overview	to do: 11:59pm
Assignment Week 4	due by 11:59pm	
Tue Sep 8, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Sep 10, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: MATLAB 1	due by 11:59pm	
Fri Sep 11, 2020	Assignment Notebook4	due by 11:59pm
Mon Sep 14, 2020	Page Week 5: Overview	to do: 11:59pm
Assignment Week 5	due by 11:59pm	
Tue Sep 15, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Sep 17, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: MATLAB 2	due by 11:59pm	

Fri Sep 18, 2020	Assignment Notebook 5	due by 11:59pm
Mon Sep 21, 2020	Page Week 6: Overview	to do: 11:59pm
Assignment Week 6	due by 11:59pm	
Tue Sep 22, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Sep 24, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: MATLAB 3	due by 11:59pm	
Fri Sep 25, 2020	Assignment Notebook 6	due by 11:59pm
Mon Sep 28, 2020	Page Week 7: Overview	to do: 11:59pm
Assignment Week 7	due by 11:59pm	
Tue Sep 29, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Oct 1, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Exam 1	due by 11:59pm	
Assignment Project : MATLAB 4	due by 11:59pm	
Fri Oct 2, 2020	Assignment Notebook 7	due by 11:59pm
Mon Oct 5, 2020	Page Week 8: Overview	to do: 11:59pm
Assignment Week 8	due by 11:59pm	
Tue Oct 6, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Oct 8, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: Arduino 1	due by 11:59pm	

Fri Oct 9, 2020	Assignment Notebook 8	due by 11:59pm
Mon Oct 12, 2020	Page Week 9: Overview	to do: 11:59pm
Assignment Week 9	due by 11:59pm	
Tue Oct 13, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Oct 15, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: Arduino 2	due by 11:59pm	
Fri Oct 16, 2020	Assignment Notebook 9	due by 11:59pm
Mon Oct 19, 2020	Page Week 10: Overview	to do: 11:59pm
Assignment Week 10	due by 11:59pm	
Tue Oct 20, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Oct 22, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: Arduino 3	due by 11:59pm	
Fri Oct 23, 2020	Assignment Notebook 10	due by 11:59pm
Mon Oct 26, 2020	Page Week 11: Overview	to do: 11:59pm
Assignment Week 11	due by 11:59pm	
Tue Oct 27, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Oct 29, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Project: Arduino 4	due by 11:59pm	
Fri Oct 30, 2020	Assignment Notebook 11	due by 11:59pm

Mon Nov 2, 2020	Page Week 12: Overview	to do: 11:59pm
Assignment Week 12	due by 11:59pm	
Tue Nov 3, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Nov 5, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Final Project - Part 1	due by 11:59pm	
Fri Nov 6, 2020	Assignment Notebook 12	due by 11:59pm
Mon Nov 9, 2020	Page Week 13: Overview	to do: 11:59pm
Assignment Week 13	due by 11:59pm	
Tue Nov 10, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Nov 12, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Assignment Final Project - Part 2	due by 11:59pm	
Fri Nov 13, 2020	Assignment Notebook 13	due by 11:59pm
Mon Nov 16, 2020	Page Week 14: Overview	to do: 11:59pm
Assignment Week 14	due by 11:59pm	
Tue Nov 17, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Thu Nov 19, 2020	Calendar Event EGR1012: Team meeting	1:30pm to 2:30pm
Fri Nov 20, 2020	Assignment Notebook 14	due by 11:59pm
		to do:

Mon Nov 23, 2020	Page Week 15	11:59pm
Tue Nov 24, 2020	Calendar Event EGR1012-1 FA20 - Introduction To Engineering I	12:30pm to 2pm
Assignment Exam 2	due by 11:59pm	
Mon Nov 30, 2020	Page Week 16: Finals Week	to do: 11:59pm
Thu Dec 3, 2020	Assignment Final Project	due by 11:59pm