Course Syllabus

ENGR 107: Introduction to Engineering

Instructor: Dr. Craig Lorie
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Teaching Assistants:
None.

Course Website:  http://ece.gmu.edu/~clorie/ENGR_107/
(please note, there is an underscore between “ENGR” and “107”)

Note when contacting Dr. Lorie: Include “ENGR 107” in the subject line of all emails (followed by the actual subject) so that they will be filtered into the correct email folder.

Course Objectives

This class introduces the student to the various disciplines of engineering, providing them with sufficient information to make an education decision on which career path to select. It provides basic information about engineering ethics and professionalism, teaching them the importance of ethical, moral, and professional decision making in engineering. Most importantly, it focuses on fundamental engineering problem-solving skills, allowing the student to gain experience in problem solving through application of these learned skills to various problems in mechanical and electrical engineering.

This class also provides the student with the opportunity to participate in a semester-long project that will force them to think creatively, work as a member of a team, design and build something to meet the specifications of the given problem, and complete the project within a specified time period and budget. Each group will be expected to produce preliminary and final reports, and provide an oral presentation describing their solution to the given problem.

Topics to be covered in this course:

1. Engineering Disciplines
2. Engineering Ethics
3. Problem Solving
4. Critical Thinking
5. Accuracy, Precision, Estimation, and Tolerance
6. Statics
7. Stress and Strain
8. Resistors and Resistor Networks
9. Ohm’s Law
10. Power
11. Semester-long group project

A more detailed schedule of the topics covered in lecture is provided in a separate document.
Textbook
Title: “Engineering Fundamentals and Problem Solving”, 5th Edition
Authors: Arvid Eide, Roland Jenison, Larry Northup, and Steven Mikelson

Lecture
Lecture Thursday 4:30 – 7:10 pm Dr. Craig Lorie

Office Hours
Dr. Craig Lorie Tuesday 1:00 – 2:00 pm
Thursday 3:00 – 4:00 pm

If you cannot attend the provided office hours, please feel free to contact me via email with questions that you have, or to schedule an alternate meeting time.

The Design Project
The design project will provide each student with the opportunity to gain practical experience in the engineering design process. This semester-long project will require teamwork, creative thinking, time management, and proper budgeting. It will require each team to complete the design and construction of a functional object that meets the given set of specifications. A detailed description of the project requirements will be provided in a separate document.

Each team will be expected to produce two written documents, including a Preliminary Project Report and a Final Project Report, and an Oral Presentation. The grading rubrics for the reports and the oral presentation will be provided separately. In addition, each team will be expected to demonstrate their working design. The format of the demonstration is to be determined.

All students should expect to spend considerable time outside of the classroom working on the project.

Project Reports
The requirements for the Preliminary and Final Project Reports will be provided separately.

Oral Presentation
Each team will give a 10 minute oral presentation about their project detailing the design choices, selected design, successes and failures of the design, and what could have been done differently. More detailed information will be provided separately.

Please note, each student must participate in the oral presentation. The presentation should be organized such that each student presents for approximately two (2) minutes.
Attendance
Attendance in lecture is highly recommended. You are expected to be adults and, as such, make decisions that give you the best chances for success. The material covered in the lectures will supplement that which is covered in the textbook, provide additional examples to aid in the learning of the material, and, most importantly, offer you opportunities to ask questions to clarify the material. Thus, it will benefit you to attend lecture.

You are responsible for all material covered in lecture.

Homework
Homework is assigned on a weekly basis, and is intended to reinforce the material covered in class. Each assignment will be posted along with its associated solution. You are expected to make an honest effort to complete the assignment prior to checking the solution. The only way you will learn the material properly is if you attempt the problems without the aid of the solution. Simply reviewing the solution will not help you understand how to solve the problem, nor will it foster the development of the engineering problem-solving skills taught in this class.

Homework will not be graded.

Writing Assignments
Writing assignments are assigned periodically throughout the semester. Each has a specific purpose, and all are essential for the learning experience in this class. Each writing assignment must be submitted via email prior to the beginning of class on the day on which it is due.

Late submissions will not be accepted.
Exams
There will be two (2) exams during the course of the semester, as well as a Final exam at the conclusion of the semester. All exams are closed book. You will, however, be allowed to use one side of an 8.5” x 11” sheet of paper on which to write your own notes. You may include anything you deem appropriate and/or useful except for previously worked out problems. Exams will be graded according to the following rubric:

- 70% of points for the work
  - Initial equation with variables only
  - Initial equation with known values inserted
  - Show all steps; do not skip any
  - Do not use a value in an equation until it is defined
- 20% of points for correct solution
  - Tolerance: +/- 5%
  - Show three (3) significant digits
  - When a calculator is used, maintain all significant digits until the end; answers will be more accurate.
  - Partial credit will be awarded if the source of the error can be ascertained.
- 10% of points for showing units
  - Units must be included with all numbers except those that are unitless
  - All or nothing basis.
- Extra credit (if offered)
  - Correct – full value of problem added to exam score
  - Not attempted – no credit
  - Incorrect – half value of problem deducted from exam score

Mechanics Exam: Thursday, October 8, 2009
Electrical Theory Exam: Thursday, December 3, 2009
Final Exam: Thursday, December 17, 2009, 4:30 – 7:15pm

Grading
Your final grade will be the weighted average of the scores you received on the writing assignments, the Mechanics and Electrical Theory exams, the Final exam, the Preliminary and Final Project Reports, and the Oral Presentation as calculate from the formula below:

Writing Assignments 10%
Mechanics Exam 10%
Electrical Theory Exam 10%
Preliminary Project Report 10%
Final Project Report 25%
Oral Presentation 10%
Final Exam 25%
Honor Code
All rules of the GMU Honor Code system will be enforced. You must review the rules of the GMU Honor Code and be familiar with them. Honor code violations will be pursued and prosecuted to the fullest extent.

Classroom Etiquette
Cellphones are to be turned off during class; minimally they must be silenced. Emergency calls may be taken, but must be taken outside of the classroom.

Texting, using your laptop for something other than lecture-related work, etc. is considered a distraction to me and to the other students trying to learn in the class, and will not be tolerated.

Students with Disabilities
If special assistance is required or special accommodations need to be made, please contact me as soon as possible so that the proper arrangements can be made.