ENGR 107-003: Introduction to Engineering
T 4:30 – 7:10pm, 107 Sandbridge Hall

Course Description:
Introduces engineering profession fundamentals and problem-solving. Topics include description of engineering disciplines, functions of the engineer, professionalism, ethics and registration, problem solving and representation of technical information, estimation and approximations, and analysis and design.

Instructor: Dr. Craig Lorie
Office: Nguyen Engineering Building, room 3221
Phone: (703) 993 – 9616
Email: clorie@gmu.edu
Office Hours:

Teaching Assistants:
None

Textbook:
None

Website: Blackboard.
Blackboard can be accessed at http://mymason.gmu.edu
Course Objectives:

This class will introduce the student to the major engineering disciplines to help him/her make an educated decision about which career path to select. It will provide basic information about engineering ethics and professionalism, to teach him/her the importance of ethical, moral, and professional decision making in engineering. It will also provide an overview of some of the fundamental concepts in engineering, and develop basic problem-solving skills as applied to various engineering disciplines.

This class will also provide the student with the opportunity to gain engineering experience through in-class projects and a semester-long design project. Both will force the student 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.

What you will learn about in this class:

1. Science vs. Engineering
2. Engineering Disciplines
3. Engineering Careers
4. The Engineering Design Process
5. Problem Solving
6. Teamwork
7. Electrical Circuits
8. Statics
9. Materials
10. Spreadsheets
11. AutoCAD (if time permits)
12. Ethics
13. Critical Thinking
14. In-class Projects
15. Group Design Project

Schedule:

A detailed schedule is provided in a separate document.
In-class Projects:
In-class projects provide the students with the opportunity to apply the Engineering Design Process to a small-scale problem. There will be two projects, each of which will be completed in one class session.

Students will work in four-person teams on each project. The team will use the engineering design process to solve the assigned engineering problem. All steps of the process will be documented, and a brief (neatly, hand-written) report will be submitted at the end of the class session. The outline for the “In-class Project Report” can be found on Blackboard.

All teams must demonstrate a working solution (to the assigned engineering problem) by the end of the class session.

Materials for the in-class projects will NOT be supplied by the instructor. It is the responsibility of each team to obtain the necessary materials for each project. A materials list is provided with each in-class project. Failure to come to class prepared to work on the project will result in a zero for all team members for that project.

The Semester-long Design Project:
The semester-long 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. Each team will be expected to demonstrate a working design at the conclusion of the semester.

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

The details and specifications of the semester-long project will be provided in a separate document.

Written Report:
A written report will be submitted by each team at the conclusion of the semester-long design project. This report will document all steps of the Engineering Design Process as they apply to the project. This includes initial and final designs, fabrication, and testing.

A “Table of Contents” is provided for this report in a separate document. Each team must use this ToC as the starting point for their report.

Please see the detailed schedule for the due date of the project report.
Homework:

Homework is assigned on a weekly basis, covering the material discussed in class that week. It is due on the date specified. Late submissions will not be accepted unless prior arrangements have been made with the instructor.

Unless otherwise stated, homework solutions are to be submitted via Blackboard.

Each homework problem will be graded according to the following scale:

- 0 No attempt was made to solve the problem.
- 5 A reasonable effort was made to solve the problem.
- 10 A significant effort was made to solve the problem.

Homework solutions should be formatted as follows:

1. Your name should appear at the top-left on all pages of your solutions.
2. The class number (ie. ECE 331) and the assignment number should appear below your name.
3. All pages should be numbered at the top-right.
4. All pages should be stapled together.
5. All solutions should be typed or written neatly and clearly – if we cannot read it we will not grade it!
6. Solutions to individual problems should be clearly separated – you should either use a horizontal line to separate problem solutions or your should start the solution to a problem on a new page.

Failure to follow the above guidelines will result in a zero (0) on the assignment!

Homework is essential to learning the material. You should make an honest and conscientious effort on all of the homework assignments.
Tests

There will be two tests. Both will be **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. This “cheat sheet” may include anything you deem appropriate and/or useful, with the exception of previously solved problems. It must be submitted to me at the conclusion of the test.

**NO** final exam.

NO make-up tests. See the instructor (in advance) for an exception.

Please see the detailed schedule for the dates of the tests.
Course Syllabus

**Attendance:**

Attendance in class is **mandatory**. Attendance will be taken periodically. Failure to attend class will adversely affect your final grade. You are responsible for all material covered in class.

**Grading:**

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<tr>
<th>Component</th>
<th>Weight</th>
<th>Final Grade</th>
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<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
<td>&gt; 93</td>
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<tr>
<td>Tests</td>
<td>20%</td>
<td>90 – 92</td>
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<tr>
<td>Class Participation</td>
<td>10%</td>
<td>87 – 89</td>
</tr>
<tr>
<td>Emerging Tech. Paper</td>
<td>25%</td>
<td>83 – 86</td>
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<tr>
<td>Project Report</td>
<td>30%</td>
<td>80 – 82</td>
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<td>Teamwork Evaluation</td>
<td>5%</td>
<td>77 – 79</td>
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<td>Your final numeric grade will be determined according to the following weighted average:</td>
<td>Your final letter grade will be assigned according to the following scale:</td>
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Grades are “curved” if and only if the class average is below a 78. In such a case, the class average is scaled up to a 78 by scaling each student’s numeric grade, prior to assigning a letter grade. Once the numeric grades have been “curved”, letter grades will be assigned.
Honor Code:

All rules of the GMU Honor Code system will be enforced in both the lecture and the lab. You must review the rules of the GMU Honor Code and be familiar with them. The GMU Honor Code website: [http://academicintegrity.gmu.edu/honorcode/](http://academicintegrity.gmu.edu/honorcode/)

You are encouraged to discuss homework problems with other students and/or obtain the assistance of the lecture or recitation instructor. Nevertheless, please write down your own solutions which represent your understanding of the material. Duplicating another student's homework solutions is considered cheating. If you use material from other sources such as, but not limited to, the web, books, journals, data sheets, etc. you must reference the source.

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.