



College of Engineering
ENGR 1101 – Intro to Engineering
Electrical Section
Temple University – Spring 2013



Introduction

The purpose of ENGR 1101 is to provide you with an understanding of the study and practice associated with civil, electrical and mechanical engineering and technology disciplines. For the electrical section, you will learn several key concepts such as programming in C/C++, hardware design using breadboards and electrical components, interfacing software with hardware using microcontrollers (Arduino), and an introduction to circuit analysis. The last part of this course will involve the Hovercraft design in which you will learn the techniques of soldering and how to efficiently design a prototype in which it is fully functional using an iPad application as the remote controller.

Staff

Instructor

Name: John J. Helferty, PhD (Associate Professor)
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Email: helferty@temple.edu
Phone: 215-204-8089
Office Hours: Monday: 2pm – 3pm Wednesday: 12pm – 1pm Friday: 9am – 10pm
* All other times, please email me to schedule an appointment

Teaching Assistants:

Name:	Timothy Boger	Salvatore Giorgi
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Office Hours:	MWF 2pm – 4pm	MWF 2pm – 4pm
Location:	RM 312 (Computer Lab)	RM 312 (Computer Lab)

Grading (Entire Course)

Mechanical Section	20%
Electrical Section	20%
Bioengineering Section	30%
Hovercraft Design	30%
Total	100%

Grading (Electrical Section)

Projects	50%
Attendance	30%
Cleanup	20%
Total	100%

Arduino Projects

There will be several projects assigned over the course of the semester that will require the use of an Arduino Microcontroller and several electrical components. You will be provided an electrical kit that will contain all the components needed to complete each project. Each project assigned will have a document that explains the concepts involved and will contain examples to fully illustrate them. Each project will have a certain amount of tasks that need to be completed to show that you have been successful in understanding the topic and to take the concepts a step further. You will be expected to think analytically and critically about the tasks to determine a solution for them. These tasks must be completed and must be demonstrated to a TA to be checked off for having the project complete. The project files will be uploaded on Blackboard so it will be available at all times when needed. Please note that certain projects will contain other documents that will explain the concepts in more detail and/or contain more examples. Please use all the available resources to complete the projects including the help of a TA.

Group Assessment and Deadlines

For the Arduino projects, you will be assigned in groups of 2 to complete the projects. Each class session will introduce a new project, in which each group must work together to complete the tasks assigned. The projects are not due the next class session; rather, they must all be demonstrated to a TA by Friday of the 2nd week of the electrical session. For example, if 4 projects are assigned within 2 weeks, they are to be fully completed by the end of Friday for the 2nd week. Hovercraft groups will be assigned into groups of 4, in which a hovercraft kit will be provided that will contain all the electrical components needed to fully assemble a working hovercraft. We will discuss this more thoroughly later on in the course.

Class Attendance

Attendance in all lectures is mandatory. For each class session, an attendance sheet will be provided in front of the room. Please sign your name in for attendance at the beginning of the class prior to walking in the room. Please refrain from signing in for other students as we will know who attended the class and who actually didn't. Therefore, do not sign in and leave the room. Students who chronically miss class or arrive late should expect their attendance grade to suffer accordingly as well as completing the projects on time. Please note that the class attendance and project completion sheet will be uploaded and updated on Blackboard every 48hrs for your convenience.

Absences

Students who miss lectures without an excused absence will be marked absent for that class session and will affect their attendance grades. If the student has proof of absence such as doctor's note or job interview or family emergency, please notify me immediately. Your professor has sole discretion in determining if your absence should be excused or not.

Collaboration

While students are encouraged to discuss project assignments, any work demonstrated to a TA or myself must be the student's own. Actions such as copying code or answers to questions are strictly prohibited. You may not use code found on the Internet or another student's who have taken the course previously as there will be no tolerance for plagiarism. Students should consider themselves bound by the Temple University Statement on Academic Honesty, which can be found online at www.temple.edu/bulletin/Responsibilities_rights/responsibilities/responsibilities.shtm

In-Class Distractions

Cell phones, pagers, and other communications devices are incredibly distracting during class. Kindly see to it that all electronic gizmos are turned off before class starts, including iPod / MP3 players. Please remove headphones and Bluetooth headsets, even if they are not on, as they are both disrespectful and distracting. Please don't even think about answering a cell phone call during class.

Open Lab Policy

Most of the projects assigned will require open lab time for the projects to be completed. TAs will be available at this time for assistance and you can demonstrate the solutions for the task to fully complete the project. Please note that it is almost guaranteed that all students will need to come to open lab due to the length and complexity of the projects assigned. Remember that the projects assigned are designed to learn intuitive principles while having fun doing them!

Incomplete

There will be no grade of Incomplete granted except for a serious medical problem. No Incomplete grade will be given on the basis of missed assignments. Both me and Dr. Chen will decide whether a grade of Incomplete can be submitted for a student based on the medical problem.

Student Input

Your input is considered very important not only to this semester's class but to those who will take this course in the future. If you have any comments concerning the projects, the TAs, or the material presentation, please let me know, either by stopping by my office to talk, sending me an email, or dropping off an anonymous note.

Project Files

While the project files will be available on Blackboard, you can download them from the following table which lists each project assigned and the documentation that goes along with it. Remember that there will be additional files for several projects, so it's recommended to download them from Blackboard directly. If you would like to preview them, the links are given below:

Project	Link
#1 – Flashing LED	http://db.tt/IE7ytLZI
#2 – DC Motor Control	http://db.tt/jXmk75lg
#3 – Continuous and Standard Servo Design	http://db.tt/YU6poB98
#4 – PING))) Ultrasonic Sensor	http://db.tt/l6znpjCi
#5 – Sensing Light with Photoresistors	http://db.tt/8Kliy2HO
#6 – Introduction to Circuit Analysis	http://db.tt/70Untznm