**EECE 1 Freshman Seminar 1**

**Class schedule:** One 50-minute lecture equivalent to1 credit

**Course Coordinator** – Mr. Chris Perez

**Course Materials** – personal laptop computer

**Course Information**

Introduction to electrical engineering and computer engineering through presentations by faculty, graduate students, upper-class undergraduate students, alumni, and industry representatives. A formal opportunity for first-year COEN, ELCE, and ELEE students to interact with their peers and other members of the EECE Department.

**Prerequisites: None**

**Required course**

**Engineering Percentages:** Engineering science 100%

**Course Goals**

* Introduce simple electronic circuits and learn how to breadboard a simple circuit
* Introduce examples of several different types of sensors
* Describe simple feedback control strategies that use information from sensors
* Introduce simple dc motor concepts
* Discuss strategies for controlling dc motors
* Introduce basic systems used to communication with electronic devices
* Describe methods for providing power to a simple electronic device
* Introduce fundamental concepts in computer architecture, including CPU, memory, and I/O
* Practice writing simple computer commands to control an electronic device
* Introduce the EECE faculty to freshman students
* Foster a “COEN/ELEN identity” with all freshman students enrolled in the EECE department
* Reinforce the student’s decision to become computer engineers and electrical engineers
* Describe specific computer engineering and electrical engineering career opportunities

**Course Objectives**

By the end of this course, students should be able to....

* Be able to breadboard a simple circuit following a circuit diagram
* Understand and be able to identify several different types of sensors
* Be able to use information from sensors to control a simple electronic device
* Understand the importance of feedback in a simple control system
* Understand basic concepts that determine the design and behavior of dc motors
* Understand and be able to use a simple strategy for controlling a dc motor
* Understand and be able to identify several different systems that can be used to communicate with an electronic device
* Understand the difference between AC and DC power
* Be able to identify the major components of a computer system and know the purpose of each
* Be able to write a simple set of commands to control an electronic device using a computer
* Be able to modify the behavior of a simple electronic device using a combination of sensor information, communication, and control
* Be able to identify many of the EECE department faculty
* Be able to describe specific career opportunities for computer engineers and electrical engineers

**Partial fulfillment of Criterion 3 objective E.**

**Course Topics**

* Week 1 Install Netbeans and RoombaComm software and test
* Week 2 Communicating with Roomba
* Week 3 Build serial interface
* Week 4 Test serial interface
* Week 5 Simple Roomba programming
* Week 6 Write a program to draw MU
* Week 7 Write a program to drive Roomba with GUI
* Week 8 Introduction to Roomba sensors
* Week 9 Program with bump sensors
* Week 10 Program with wheel drop sensors
* Week 11 Making music with Roomba
* Week 12 Program Roomba to sing
* Week 13 Program Roomba as a keyboard