ELEC 101: Elements of Electrical Engineering

Website for Notes and Homeworks: http://elec101.rice.edu

Instructors:
Prof. Ashutosh Sabharwal (Email: ashu@rice.edu, Office: Duncan Hall 2018, Phone: x5057)
Prof. Lin Zhong (Email: lzhong@rice.edu, Office: Duncan Hall 3046, Phone: x4163)

Teaching Assistants:
Ashley Herron (Senior, Martel, anh3@rice.edu)
Patrick Breen (Sophomore, Wiess, peb2@rice.edu)
Robert LiKamWa (Graduate, Will Rice’10, robert.likamwa@rice.edu)

Suggested Books (to be updated throughout the semester):

Guest Lectures by
Prof. Ray Simar, ECE and CS.
ECE Seniors on Feb 3 in DH 3092.

Course Layout
The objective of the course is to discover key basic concepts in ECE via hands-on labs. The course will be roughly divided into three tightly related parts. In the first two parts, we will deconstruct how systems are built. Our system will be the Lego NXT. The deconstruction will start at the highest level and dig deeper as we proceed through the semester. In the last part of the course, we will construct an NXT-based system.

1. In the first part by Prof. Sabharwal, we will learn about the concept of a system and its components. In this part we will get introduced to fundamentals in signals, information in signals, processing signals and making decisions based on signals.
2. In the second part by Prof. Zhong, we will dig deeper Lego NXT and understand how it is built and how it works. This will be an introduction to fundamentals building blocks of computer engineerings - gates and logic, transistors, processors and programming.
3. The last part by you will be the final project, where you will use the concepts learnt in the first two parts to develop a sophisticated NXT robots. This will time to have some fun and shoot for the best project prize!

In addition, there will be three more opportunities to learn beyond the above course content.

• Prof. Simar will talk about building exciting new systems based on his 20+ years of experience at Texas Instruments.
• ECE Seniors will give a 5-minute sales pitch on their ongoing Senior Design projects. This will give you a glimpse of the impact ECE majors have on our lives.

Lecture Hours: Tues, Thur 10:50am - 12:05pm
Extra Lab Hours: Monday 4-6pm (Patrick), Tuesday 7-9pm (Ashley) and Wednesday (4-6pm). Access beyond these hours will be by appointment - write to TAs for an appointment.
Office Hours: Sabharwal (by appointment via email) and Zhong (by appointment via email).

Grading:
• Final grade = 70% Homeworks + 30% Final Project.
• All homeworks and project reports will be submitted electronically to Owlspace. Often homeworks will involve submitting multiple files. Make sure you include a text report where you explain your answers and your well-commented code as separate files. The TAs will run your code while grading your labs. More details will be provided with each homework on naming convention for these files.

• For all homeworks, groups of two will be formed at random and homeworks will be graded for the whole team.

• For the final project, you will have the freedom to select your team members.