EE16B Fall 2016
Lab Schedule

Week of	Lab Title	Description
8/22/16	(No lab)	
8/29/16	Introduction to Debugging	Review of lab equipment and lab safety. Learn debugging techniques, tips, and tricks. Applications: skills needed for the rest of lab
9/5/16	Digital to Analog Converter	Build a simple D/A converter. Learn how to go from the digital to analog signals. Applications: MP3 players, convert digital video for TVs
9/12/16	Analog to Digital Converter	Build a simple A/D converter Learn how to go from analog to digital signals. Applications: music recording, signal processing
9/19/16	Mystery Circuit Assembly of Mic Boards	Reverse engineer a mystery circuit. Learn how to determine important characteristics of filters and amplifiers using your o-scope. Begin assembly of mic PCBs for use in Color Organ Applications: skills for project, frequency response analysis
9/26/16	Color Organ: Part I	Build a circuit that is fed music and illuminates LEDs based on frequency content. Learn how to apply filters and amplifiers. Applications: signal processing
10/3/16	Color Organ: Part II	
Project: SIXT33N		
10/10/16	Mic Circuit: Part I	Build a microphone circuit that will be used to communicate with SIXT33N, including the microphone, filters, and amplifiers.
10/17/16	Mic Circuit: Part II	
10/24/16	Introduction to Controls: Part I	Build a car, collect open-loop data, and implement a closed-loop control scheme to make the car go straight. Learn how eigenvectors can affect the controllability of a system.
10/31/16	Introduction to Controls: Part II	
11/7/16	SVD/PCA	Implement PCA algorithm to verbally control SIXT33N. Learn how to use PCA to distinguish between words or musical genera.
11/14/16	Advanced Controls	Add to the closed-loop control scheme to make SIXT33N turn.
11/21/16	Thanksgiving – No Lab	
11/28/16	Integration	Refine the way that the different systems of SIXT33N will interact with each other. Finish the final SIXT33N robot.
12/5/16	RRR Week	
12/12/16	Finals Week	

EE16B Fall 2016
Guide to Lab

Purpose:
Lab provides an opportunity to apply the material learned in lecture. Building circuits with real components helps build intuition and reinforce concepts, which in turn will help with lecture and exams. Lab requires critical thinking and problem solving skills that are useful in all areas of this course. Additionally, lab requires students to work in groups, fostering teamwork and collaboration.

Lab Expectations:

- Lab will begin with a short introductory presentation by the lab GSI, which will contain important lab information. It is expected that students will arrive on time and refrain from distractions (phones, computers, etc.).
- Treat the lab equipment with respect – any damaged or missing equipment will negatively impact the ability of the course as a whole to complete lab assignments in a timely fashion.
- Clean up after yourself: put away equipment (leads, extra wires, parts, etc.) in the correct locations. Failure to clean up workstations will result in a grade penalty.
- No food or drink at the lab workstations!
- Be patient – there are other students who also need help. Ask your neighbors for help too.

Grading:
Lab grades account for a total of 30% of final grades. Within lab, the breakdown is as follows:

Labs (6 total)	40%
Project	60%

Lab check offs:
Each lab will be graded on a completion. Labs must be checked off by a Lab GSI within **1 week** of assignment – late labs will **not** be accepted. If a conflict occurs (ie: illness, interview, etc.) it is the responsibility of the student to communicate with his/her lab GSI and make necessary arrangements to complete the lab.

Project Grading:
In order to encourage spreading out project work throughout the semester, each week will have checkpoints that must be met in order to receive credit for that lab. Checkpoints must be checked off within **1 week** of assignment to receive credit. The project breakdown is as follows:

Checkpoints (8 total)	20%
Final Demo	50%
Final Report	20%
Participation	10%