Welcome to EE43/100

LAB 0: Welcome to EE43/100

ELECTRICAL ENGINEERING 43/100

INTRODUCTION TO DIGITAL ELECTRONICS

University Of California, Berkeley

Department of Electrical Engineering and Computer Science

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DISCLAIMER:

Dear Class,

The contents of the following class may be frustratingly difficult at times, but since we know that you're awesome, we know that you, in the interest of self-preservation, will attempt and complete all the labs. We know that many of you are majoring in something seemingly far removed from EE and are predisposed to hating this class, but we hope that the contents of these labs will at least make you nominally acknowledge that the material is at a minimum interesting. The labs are not meant to be mortally debilitating to your soul and we will try to make them as painless and/or amusing as possible.

Regards,

Your Teaching Staff

Basic Stuff

Labs will normally consist of two components: pre-lab and lab. In the pre-lab, we will usually cover the basic theory that will be presented in lab. During your time in the laboratory, we will actually build the circuits and explore the practical and non-idealized implementation of the circuit material presented.

Lastly, we know how much everyone likes putting units on their measurements. In these labs, when you are prompted for a numerical answer, make sure to put the correct units, or we will automatically assume that the answer is in Terawatt-meters per Faraday.

Pre-Lab

The pre-lab sections of each lab are designed to prepare you adequately for the lab component. In these pre-lab sections, it is important for you to understand the concepts presented and, if asked, simulate a functional circuit before coming to the lab. If you do not complete the pre-lab, there is a good chance that you will **NOT** be able to complete the lab in the allotted three-hour lab section.

For every pre-lab, you are responsible for **answering all of the questions** presented, in addition to **reading through the entire lab document**. It is your responsibility to ask your lab partner/friend/local circuit guru or attend office hours if you do not understand something in the lab.

The pre-lab should be completed individually so that both partners in the tag team understand the basis and reasoning behind the lab.

Lab Component

All lab sections will be held in room 140 Cory Hall. Each lab section is three hours long, during which you will complete the laboratory component of the lab. For each lab, you will be required to demonstrate the working implementation of the circuit presented to your lab GSI for check off. If you do not get these lab check offs, you will not get full credit for the lab component.

The labs are written and tested to be completed in three hours, provided you adequately prepared yourself with the pre-lab. If you ever try and attend another lab section to finish your circuit, be aware that the TA will not be obligated to help you and that some sections are not part of EE43/100. In addition, you cannot ask the TA during your makeup section to check you off.

The lab should be completed in pairs, because there are not enough workstations for each student to complete the lab individually. There will be NO groups of 3 or more; this rule will be strictly enforced.

Finally, there is **ABSOLUTELY NO FOOD OR DRINK** allowed in the labs **AT ANY TIME**. Failure to comply with this sacred rule will subject you to the wrath of Pete Caraghar or Ming Wong, the godfathers of 140 Cory.

Take Home Instruments

Once we kick off the semester and the dust settles, we will be offering to check out to each pair of students a myDAQ, a breadboard, and kit of circuit components to take home and use. The myDAQ is a data acquisition device which also comes with on board instrumentation capabilities.

If you are interested, you may use these myDAQs to perform lab assignments at home during your own time before you come to lab. This will ensure that you do not have to stay during the whole 3-hour section, freeing up the GSI's time to devote to groups that may need more help. This also helps those of you who fear that you cannot finish your labs in the allocated time by giving you a head start. Keep in mind that you are not obligated to take home the myDAQ; it is just an option for those of you who want to work on circuits outside of the lab.

The kit that you will be receiving will contain all of the parts you will be using throughout the semester, except for resistors, capacitors, and op amps. The kits are one per tag team and will be deployed at the beginning of lab 3. **Do NOT** lose, break, fry, eat, swallow, explode or otherwise destroy these parts. You will only be provided with what is necessary and one or two extras. If you need more parts, your TA will have some spares, but if you become the master of disaster we reserve the right to begin docking points from your overall lab score.

If you are issued a myDAQ to take home and use, you will be responsible for returning it at the end of the semester. Failure to return this item will result in **disciplinary actions** subject to the discretion of the professor and department chair.

That said, it is **ABSOLUTELY CRITICAL** that you find a lab partner who you are willing to snuggle up with for the entire semester. These labs are designed to be completed in groups of two, so it is imperative that you do not let your partner jump ship halfway into the semester.

Final Project

Throughout the laboratory set, you will be building modules that may culminate into your final project. The final project for this semester is currently in the works and will be revealed to you in due time.

Lab Submissions

For each lab we will provide you with one of these lab documents that will guide you through the lab. At the top right corner of each lab document there will be a box with fields for you and your partner's names and student ID numbers. Your tag team will submit one copy of your work per lab.

Typically the lab for week N will be due at the beginning of lab N+1 unless otherwise specified. Also, there will be no new labs held during midterm weeks.

When you submit your lab documents, make sure to attach any other work, graphs, or circuit diagrams that the lab asks for. It is hard to give partial credit for a lab report that refers to a non-existent circuit diagram. Also please do not use invisible ink or write illegibly—they're practically the same thing.

Most importantly, we hope that you find these labs at least somewhat educational. Have fun! ☺