UNIVERSITY OF CALIFORNIA

Department of Electrical Engineering and Computer Sciences

EE 105: MICROELECTRONIC DEVICES AND CIRCUITS

https://inst.eecs.berkeley.edu/~ee105/sp16/

Spring 2016 Prof. David J. Allstot

Professor: David J. Allstot (allstot@eecs.berkeley.edu, Office: 564 Cory)

GSIs: Lucas Calderin (lcalderin@berkeley.edu)

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Objective:

To provide a basic understanding of semiconductor devices (p-n junction diodes, bipolar and field effect transistors) and the design of analog integrated circuits using these devices.

Prerequisite:

KVL and KCL, node-voltage analysis, Thevenin and Norton equivalent circuits, design and analysis of circuits with operational amplifiers, impedance, time domain analysis, frequency response (Bode plots), analog vs. digital signals, laboratory techniques (breadboarding and operation of supplies, DVM, oscilloscope and function generator). This material is covered in EE 40.

Relation to Other Courses:

EE105 is a prerequisite for EE140 (Linear Integrated Circuits) and EE142 (Integrated Circuits for Communications). It is also helpful (but not required) for EE141 (Intro. to Digital Integrated Circuits).

Textbook: *Microelectronic Circuits*, 7th Edition, by Adel Sedra and Kenneth C. Smith, Oxford University Press, 2014.

Lectures (155 Donner Lab)**:** Tuesday, Thursday 5:00 to 6:30 pm

Discussion Sections (beginning on Tuesday 1/26):

Section 101 (241 Cory):	Thursday 1 - 2 pm	Lucas Calderin
Section 102 (155 Kroeber):	Tuesday 4 - 5 pm	Lucas Calderin

* Please attend the section in which you are enrolled.

Office Hours:

David J. Allstot: (564 Cory):	Tuesday 1:30 - 3:30 pm, Thursday 3:00 - 4:30 pm
Lucas Calderin (504 Cory):	Thursday 2 - 3 pm
Pi-Feng Chiu (125 Cory)	Tuesday 11 - 12 am

Laboratory Sections (beginning on Monday 2/8):

Section 010 (125 Cory):	Monday 2 - 5 pm;	Pi-Feng Chiu
Section 011 (125 Cory):	Tuesday 8:00 - 11:00 am;	Pi-Feng Chiu
Section 012 (125 Cory):	Wednesday 3 - 6 pm;	Lucas Calderin

Students should attend the Lab section in which they are enrolled. All of the lab assignments – along with helpful tutorials -- are posted online under Labs. Each pre-lab assignment is due at the beginning of the corresponding lab session. Post-lab assignments are due at the beginning of the following lab session. Although students will be allowed to work in pairs during the lab sessions, each student must individually turn in his/her own pre-lab and post-lab assignments.

* You must turn in the Lab Report on time. Late reports will be discounted by 50%.

Homework:

Weekly assignments will be posted online on Fridays. They are due the following Friday at 5 pm; turn in at the EE105 Drop box in Cory Hall (near TI Lab). Late homework will not be accepted.
You are encouraged to discuss homework problems with other students in the class, the GSIs, and the instructor. However, the work that you submit for grading must be your own.

Midterms:

Two midterms (80 minutes each) will be given in class. These are intended to gauge the student's understanding of the basic concepts covered in the course. Some numerical calculations might be required (*i.e.*, bring your calculator). All exams will be closed book (with 2 pages of notes).

Final Exam:

The final exam will be closed book, with 4 pages of notes allowed. Students will need to bring a calculator. The Final Exam for Group #18 will be given on **Friday 5/13 from 11:30 am - 2:30 pm**. No early final exam will be offered.

Grading:

Your grade will be computed from a weighted average of

Homework:	10% (Lowest score will be dropped from grade calculation)
Lab:	20% (You must complete all labs to pass the course!)
Midterms:	30% (15% each)
Final Exam:	40%

Academic Dishonesty: See Department policy at http://www.eecs.berkeley.edu/Policies/acad.dis.shtml

Course Accommodations:

Students may request accommodation of religious creed, disabilities, and other special circumstances. Please make an appointment with Prof. Allstot to discuss your request before the end of second week (Jan. 29), so that he can plan accordingly in advance.

Classroom Etiquette:

- Arrive in class on time!
- Bring your own copy of the lecture notes (posted online no later than 5 PM on the previous day).
- Turn off cell phones.
- No distracting conversations—relevant questions are encouraged