EE40: *Electronic Circuit Design*

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Professor

- Michel M. Maharbiz, EECS
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Objectives:

Analyze, design, build and test electronic circuits, and understand their capabilities and limitations.

1. Understand fundamental circuit principles
    - Lumped circuit model (Kirchhoff's laws)
    - Energy storage (capacitors and inductors)
    - Time and frequency domain signal representations
    - Analog and digital signals, conversion
2. Design, build, and test electronic circuits
    - Circuit hierarchy and modularity
    - Laboratory practices (breadboarding, test equipment)
    - Guided laboratories + project
3. Understand circuit limitations
    - Circuit imperfections (e.g. component variations)
    - Power / accuracy / speed tradeoff
    - Moore's law (technology and economic implications)

Textbook: Ulaby and Maharbiz, *Circuits*, 1st edition, 2nd printing, 2009.

Lecture

- Monday, Wednesday, Friday
- 11 am – 12 pm
- 10 Evans

Office Hours

- Monday, Friday after lunch (1 – 2 pm)
- Or, you can email me for an appointment if you aren't able to make regular office hours
    - go to http://www.eecs.berkeley.edu/~maharbiz/schedule.htm
    - Pick a free time on my schedule
    - Email me and wait for confirmation

Grading:

- Homework: 10 %
- Midterms (2): 30 %
- Final Exam: 30 %
- Labs: 30%

Tests

- Missed exam will only be allowed for medical reasons or research-related travel and HAS TO BE APPROVED BY ME OVER EMAIL three (3) weeks in advance.

Homeworks

- You can miss 1 HW
- Else, your lowest score will be dropped
- **Cheating**
- No excuses; I will seek the maximum penalty and fully follow the department policy (except, I don't allow repetition of work under *any* circumstance)
  http://www.eecs.berkeley.edu/Policies/acad.dis.shtml

Labs and Final Project

- In pairs, you will build a working EEG!
  - http://openeeg.sourceforge.net/doc/
  - http://www.neurosky.com/

Soldering	23 Jan M-F
Resistors	30 Jan M-F
Amplification I - sim amp	6 Feb M-F
Amplification II - instr amp	13 Feb M-F
No labs (also, Midterm 1)	week of 20 Feb
RLC / oscillators	27 Feb M-F
Filters	5 March M-F
ADC	12 March M-F
Project design, SPICE, breadboard	19 March M-F
Breadboard testing and debug	2 April M-F
PCB layout **(also Midterm 2)**	9 April M-F
- NO LABS - PCB FAB-	16 April M-F
Solder / build	23 April
Check off - put EEG on my head	One day, week of 30 April