



## Contact Information

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## Schedule

Lecture / Lab: T 6:30-10:30  
Office Hours: M11, T10

You are encouraged to come to office hours to ask questions, talk about your freshman year, or just raid the candy jar. Even if I am not officially holding office hours, I am available more often than not, so try dropping in or calling to see if I am there.

## Grading & Attendance

This seminar is a pass/fail class for 1 unit of credit. It will be very interactive and hands-on; you **MUST** attend to get the most out of it. To pass the class, you are expected to actively participate in class and to miss no more than two of the meetings. If you expect to miss a class, please let me know in advance. If you are feeling excessive pressure from the rest of your academic load, this seminar should be a lower priority and you may drop it with no ill-will; just let me know rather than disappear without a trace!

## Tentative Agenda

This is an experimental seminar, so the agenda may evolve as we go. My goal is to give you a taste of engineering that most students will not experience until the junior or senior year. We're exploring digital electronics and chip design, both because they are my favorite topics and because they are easy enough that you can learn all the foundations in a few lectures and begin detailed design of sophisticated systems. I'd like you to get a feel if engineering is the path you want to pursue and I hope you'll find the material as fun and exciting as I do!

In the seminar, you will learn about digital electronics and logic gates. You'll learn to solder and assemble your own utility board that you will use for projects with commercially available chips during the first half of the class. In the second half, you will learn how to build Complementary Metal Oxide Semiconductor (CMOS) chips yourself! As a class, we will design and layout a chip of our own. If we are successful with the design, we'll send our chip out for manufacturing!

Date	Topic
8/26 (Sat)	Rock Climbing at Big Rock
8/30 (Wed)	Soldering & Utility Board
9/5	Logic gates
9/12	Boolean algebra
9/19	Sequential Circuits
9/26	Finite State Machines
10/3	CMOS circuits
10/10	CMOS layout
10/17	Fall Break: No Seminar!
10/24	Structured Layout
10/31	Project Kickoff
11/7	Project II
11/14	Project III
11/21	Thanksgiving Week: No Seminar!
11/28	Project IV
12/5	Project Tapeout!

## Lab Kit Contents

Description	Part	Supplier	Quantity	Unit Price	Total
PC Board		CFC	1	\$7.00	\$7.00
Breadboard	20757	Jameco	1	\$11.95	\$11.95
Wire stripper	78991	Jameco	1	\$2.95	\$2.95
Screwdriver set	34041	Jameco	1	\$2.59	\$2.59
IC extractor	16838	Jameco	1	\$1.49	\$1.49
Transformer	15561	Jameco	1	5.25	\$5.25
7805T regulator	51262	Jameco	1	\$0.39	\$0.39
74LS244		stockroom	1		\$0.00
555 timer		stockroom	1		\$0.00
20 pin DIP socket	112248	Jameco	1	\$0.10	\$0.10
8 pin DIP socket	112205	Jameco	1	\$0.08	\$0.08
power switch	75862	Jameco	1	\$0.89	\$0.89
quad dip switch	38818	Jameco	1	\$0.65	\$0.65
pushbutton switch	101012	Jameco	2	\$0.35	\$0.70
male header	103368	Jameco	1	\$0.22	\$0.22
red LEDs	156953	Jameco	8	\$0.15	\$1.20
green LEDs	34761	Jameco	1	\$0.11	\$0.11
100K pot	43027	Jameco	1	\$0.79	\$0.79
390 ohm resistors		stockroom	9		\$0.00
1 k resistors	29663	Jameco	3	\$0.01	\$0.01
2 k resistors	30277	Jameco	1	\$0.01	\$0.01
10 k resistors	29911	Jameco	4	\$0.01	\$0.05
0.01 uf capacitor	15229	Jameco	1	\$0.04	\$0.04
4.7 uf capacitor		stockroom	1		\$0.00
10 uf capacitor	29891	Jameco	1	\$0.07	\$0.07
74LS00		stockroom	1		\$0.00
74LS02		stockroom	1		\$0.00
74LS04		stockroom	1		\$0.00
74LS08		stockroom	1		\$0.00
74LS11		stockroom	1		\$0.00
74LS32		stockroom	1		\$0.00
74LS74	48004	Jameco	1	\$0.25	\$0.25
antistatic foam	13864	Jameco	0.1	\$9.95	\$1.00
wire	36821	Jameco	1	3.95	\$3.95
red, white, black wires		stockroom	1		0
<b>Total</b>					<b>\$36.47</b>