

ECE 342
Course Information

Fall Semester 2012

Professor E. Rosenbaum

Class Meetings

11:00 AM – 11:50 AM, 124 Burrill Hall

Instructor

Professor Elyse Rosenbaum: *elyse*

Teaching Assistants

Thidarat (“June”) Chongvisal: *chongvi1*

Lei Jin (**Head TA**): *leijin3*

Vrashank Shukla: *vshukla2*

Nicholas (“Nick”) Thomson: *nthomso2*

Office Hours

Monday 1:00 PM – 2:00 PM, 330N EL

Monday 2:00 PM – 3:00 PM, 330N EL

Monday 3:00 PM – 4:00 PM, 407 CSL (professor’s office hour)

Monday 4:00 PM – 5:00 PM, 330N EL

Tuesday 10:00 AM – 11:00 AM, 368 EL

Tuesday 12:00 noon – 1:00 PM, 368 EL

Tuesday 2:00 PM – 3:00 PM, 368 EL

Friday 8:30 AM – 9:30 AM, 407 CSL (professor’s office hour)

Friday 12 noon – 1:00 PM, 368 EL

Friday 3:00 PM – 4:00 PM, 368 EL

TA-led Problem Solving Session (attendance is optional)

Friday 4:00 – 4:30 PM, 260 EL

Textbook

A. Sedra and K. Smith, *Microelectronic Circuits, Sixth Edition*, Oxford University Press, 2010.

Grading

Weekly Homework 10%

Completed homework is to be placed in the drop box marked “ECE 342” in the basement of Everitt Lab. Homework must be turned in before 11:00 AM on the due date. Late homework is not accepted – no exceptions. Your lowest weekly homework score will be dropped before your semester total homework score is calculated, and thus you need not worry about missing a homework assignment due to illness. Homework solutions will be posted on the class web page. Students are encouraged to form study groups. However, each student must independently generate his/her own homework solutions. If the instructional staff-members determine that students are copying each other’s solutions or collaborating to a degree more than intended, one warning will be issued. If the same students subsequently engage in plagiarism or inappropriate collaboration, they will receive a score of zero for the homework assignment.

First Midterm Exam 20%

Second Midterm Exam 20%

Final Exam 40%

HSPICE Assignments (2): 10%

ECE342 Web Page

<http://courses.engr.illinois.edu/ece342/index.htm>

Check the web page a few times per week; this is where corrections to homework assignments and changes to office hours will be posted. HSPICE tutorials will be available on the class web site. A web-based forum has been set up; you can link to the web-board from the class website or try <https://my.ece.illinois.edu/webboard/board.asp> . **All** questions regarding the homework assignments, solutions, and exams should be posted to the web-board. It is the **primary** means of staff-student communication outside of class and office hours. The TAs will check this forum often and will post responses to any queries. Email should be used only for matters of a personal nature.

Syllabus

A class syllabus is provided on the next page. The exam dates are firm, and students should not schedule plant trips or other conflicting activities on these dates.

Classroom Decorum

Students are welcome and encouraged to ask relevant questions anytime during the class period. Cell phones and other handheld communication devices should be turned off. Class lectures will sometimes cover material that is not in the textbook; therefore, class attendance is very strongly encouraged. If you are absent due to travel or illness, you should obtain a copy of a classmate's notes. If you are habitually late to class, do not expect the instructor or TAs to provide private tutoring on the material you have missed.

Absences

No special accommodation is made for student absences except (i) absence due to serious illness confirmed by a dean, and (ii) university-sanctioned absence (generally for varsity athletic competitions). Any student who misses an exam or more than one week of class due to serious illness, should contact the instructor as soon as possible. The instructor must be informed of planned (excused) absences that will occur on exam days at least two weeks in advance, but preferably at the very beginning of the semester.

Syllabus

1	8/27/12	Introduction and review
2	8/29/12	CMOS technology, MOS transistor
3	8/31/12	MOSFET large-signal model
4	9/5/12	DC analysis of circuits containing MOSFETs
5	9/7/12	Introduction to digital circuits
6	9/10/12	Static characteristics of CMOS inverter
7	9/12/12	Propagation delay of CMOS inverter
8	9/14/12	Parasitic capacitances in CMOS
9	9/17/12	Transistor sizing for delay minimization; Power
10	9/19/12	CMOS logic gates
11	9/21/12	Previous topic, continued; Diode models
12	9/24/12	DC analysis of circuits containing diodes
13	9/26/12	BJT large-signal model
14	9/28/12	DC analysis of circuits containing BJTs
15	10/1/12	MIDTERM 1 (7 PM)
16	10/3/12	Amplifier models
17	10/5/12	Amplifier frequency response
18	10/8/12	Small-signal modeling; MOSFET small-signal model for low-frequency operation
19	10/10/12	BJT small-signal model for low frequencies
20	10/12/12	Common source (CS) amplifier (biasing, midband gain, input and output resistance, headroom)
21	10/15/12	Previous topic, continued
22	10/17/12	Previous topic, continued
23	10/19/12	Common emitter (CE) amplifier
24	10/22/12	Previous topic, continued; Emitter degeneration
25	10/24/12	High-frequency model of the MOSFET
26	10/26/12	High-frequency model of the BJT
27	10/29/12	Frequency-dependent analysis of CS amplifier
28	10/31/12	Previous topic, continued
29	11/2/12	Previous topic, continued
30	11/5/12	Frequency-dependent analysis of CE amp
31	11/7/12	MIDTERM 2 (7 PM)
32	11/9/12	Previous topic, continued; Frequency-dependent gain of CE amp with emitter degeneration
33	11/12/12	Midband and high frequency analysis of source follower
34	11/14/12	Previous topic, continued
35	11/16/12	Midband and high frequency analysis of emitter follower
36	11/26/12	Multi-stage amplifiers
37	11/28/12	Previous topic, continued
38	11/30/12	MOS and bipolar current sources
39	12/3/12	Active load
40	12/5/12	Introduction to the differential amplifier
41	12/7/12	Previous topic, continued; Ideal op-amp
42	12/10/12	Op-amp applications and introduction to feedback
43	12/12/12	Previous topic, continued
	12/14/12	FINAL EXAM (8 AM)