

ECE 442 Course Information

Fall Semester 2009

Prof. N. Shanbhag

Class Meetings

MWF 11:00 AM – 11:50 AM, 165 Everitt Lab

Instructors

Professor Naresh Shanbhag

Office Hours: Tuesday 3:00 PM – 4:00 PM, 413 CSL

Email: shanbhag@illinois.edu

Teaching Assistants

Pavle Milosevic

Office Hours: Wednesday 10:00 AM – 11:00 AM, 368 EL

Tuesday 1:00 PM – 2:00 PM, 361 EL (even weeks)

Email: pmilose2@illinois.edu

Minwei Lu

Office Hours: Monday 10:00 AM – 11:00 AM, 368 EL

Tuesday 1:00 PM – 2:00 PM, 361 EL (odd weeks)

Email: mlu9@illinois.edu

Textbook

A. Sedra and K. Smith, Microelectronic Circuits, 5th ed., Oxford University Press, 2004.

Grading

Weekly Homework 20%

*Homework is to be placed in the ECE442 homework box in the basement of Everitt Lab no later than 5 PM on the due date. Please do not give your homework to any of the instructors or teaching assistants after this time, as we will **not** accept it. At the end of the semester, your two lowest homework grades will be dropped—therefore, make-up opportunities for missing homework will only be provided under rare circumstances (e.g. serious, documented medical illness). Homework is to be a student's own work, not a collaborative effort; however, students are encouraged to discuss methods of solution and the course material with each other.*

First Midterm Exam 20%

Second Midterm Exam 20%

Final Exam 40%

ECE442 Web Page

<http://courses.ece.uiuc.edu/ece442/>

Check the web page several times per week; this is where corrections to homework assignments and office hour changes will be posted. A web-based forum has also been set up:

<http://my.ece.uiuc.edu/webboard/board.asp>. This is the **primary** means of staff-student communication outside of lecture hours. This is where you should post questions or information that might be of interest to your fellow students, i.e., a note that a homework problem is missing a necessary parameter. The TAs will check this forum daily and will post responses to any queries.

**ECE 442
Syllabus**

Fall Semester 2009

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<u>Date</u>	<u>Topic</u>	<u>Reading Assignment</u>
8/24	Introduction & Motivation, Review: Circuit analysis techniques	Appendix C
8/26	Electronic device models: detailed, simple (e.g., PWL), small-signal	3.2, 3.3
8/28	Diode models	3.2, 3.3, 3.7
8/31	DC analysis of circuits containing diodes	3.1, 3.4
9/2	Rectifiers	3.5
9/4	BJT large-signal model	5.1, 5.2
9/7	No class	
9/9	DC analysis of circuits containing BJTs	5.4
9/11	BJT small-signal model	5.6
9/14	MOSFET large-signal model	4.1, 4.2
9/16	MOSFET small-signal model	4.6
9/18	DC analysis of circuits containing MOSFETs	4.3
9/21	Digital circuits; Static characteristics of CMOS inverter	10.1, 4.10
9/23	CMOS inverter: parasitic capacitances and switching delay	10.2
9/25	CMOS inverter: switching delay	10.2
9/28	CMOS inverter: noise margin, power	10.2
9/30	CMOS digital circuits	10.3, 10.4
10/2	Midterm 1	
10/5	Amplifier models: gain, R_{IN} , R_{OUT}	1.4, 1.5
10/7	Frequency response of amplifiers, Bode plots, gain-BW product	1.5, 1.6, Appendix E
10/9	High-frequency small-signal device models	5.8, 4.8
10/12	Common emitter (CE) amplifier: mid-band gain, R_{IN} , R_{OUT}	5.7
10/14	CE amplifier: swing, frequency response	notes, 5.9
10/16	CE amp frequency response, Miller's Theorem	6.4.4, 5.7, 5.9
10/19	Common source (CS) amplifier: mid-band gain, R_{IN} , R_{OUT}	4.7
10/21	CS amplifier: swing, frequency response	4.9
10/23	CS Amplifier frequency response	4.9
10/26	Common base (CB) amplifier: mid-band gain analysis, R_{IN} , R_{OUT}	5.7
10/28	CB amp, cont'd	5.7
10/30	Midterm 2	
11/2	Common gate (CG) amplifier: mid-band gain analysis, R_{IN} , R_{OUT}	4.7
11/4	Source and emitter degeneration	4.7
11/6	Source and emitter degeneration;	4.7, 6.9
11/9	MOS vs. bipolar comparison	6.2
11/11	Bipolar current sources	6.3
11/13	MOS current sources	6.3
11/16	Active load	6.5
11/18	Active load, cont'd	6.5
11/20	Cascode amplifier	6.8, notes
11/30	Cascode cont'd	6.8, notes
12/2	Introduction to the differential pair	7.1, 7.2, notes
12/4	Differential pair cont'd	7.1, 7.2, notes
12/7	Applications of electronic circuits	
12/9	Semester Review	