

University of California at Berkeley
College of Engineering
Department of Electrical Engineering and Computer Sciences

EE 105: Microelectronic Devices and Circuits

Prof. R. T. Howe

Spring 2002

COURSE DESCRIPTION

Microelectronic Devices and Circuits aims to provide a basic understanding of analog integrated circuits, as well as an introduction to electronic devices. See the attached “Instructional Objectives” for more detail. The course consists of three 50-minute lectures per week, one discussion session at which the homework and lecture material will be reviewed, and one three-hour laboratory per week. The prerequisite is EECS 40.

Text: R. T. Howe and C. G. Sodini, *Microelectronics: an Integrated Approach*, Prentice-Hall, 1997.

A reader including the Laboratory Manual and excerpts on basic circuit analysis and frequency-domain circuit analysis is available from Copy Central (Southside), 2560 Bancroft Way.

Reserve Books: In addition to the textbook and the reader, the following references are helpful and will be on two-hour reserve at the Bechtel Engineering Library:

Parallel Textbooks: *very* useful for around 75% of the course material.

A. S. Sedra and K. C. Smith, *Microelectronic Circuits*, 4th ed., 1997.

R. C. Jaeger, *Microelectronic Circuit Design*, McGraw Hill, 1997.

M. N. Horenstein, *Microelectronic Circuits and Devices*, Prentice Hall, 2nd ed., 1996.

SPICE references:

M. H. Rashid, *SPICE for Circuits and Electronics using PSpice*, Prentice Hall, 1995.

P. W. Tuinenga, *SPICE, A Guide to Circuit Simulation & Analysis using PSpice*, Prentice Hall, 1995.

Exams and Grading: There will be two midterms and a final exam. The midterms will be held on Wednesday, March 6 and on Wednesday, April 17 from 6:00 - 7:30 pm and the final exam will take place 8:00 – 11:00 am on Saturday, May 18 in rooms to be announced.

Your grade for the course will be made up *approximately* as follows:

Homework 10%, Laboratory, 25%; Midterm I, 15%; Midterm II, 20%, Final exam, 30%.

Homework and exams in the class will be “challenging.” For your final course grade, an absolute grading scheme will be used: >82.5=A, 80-82.5=A-, 77.5-80=B+, 72.5-77.5=B, 70-72.5=B-, 67.5-70=C+, 52.5-67.5=C, 50-52.5=C-. In Fall 2001’s EE 105 class, there were 122 undergrads who received 41% A’s, 28% B’s, 23% C’s, and 8% D’s, F’s, and I’s.

Laboratory: The laboratory is based on a BiCMOS tile-array chip set from MicroLinear, Inc. that allows a series of experiments that are closely connected with the lecture material. Satisfactory completion of the laboratory is *required* in order to receive a grade in the course.

Homework Assignments: There will be weekly assignments during the semester, distributed on Wednesday and due at 4:00 pm the following Tuesday in a box labeled “EE 105” located in the hallway outside 275 Cory. Assignments that would have been due just prior to a midterm exam will instead be due Thursday at 4:00 pm. For homework assignments that include SPICE, *no credit* will be given unless the SPICE portions are completed. Solutions to the homework will be distributed at the following lecture.

Academic Dishonesty: See the EECS Department policy stated at <http://buffy.eecs.berkeley.edu/~ruth/ac.dis.html>