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 Fall 2001

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, October 10 and on Wednesday, November 14 from 6:00 - 7:30 pm and the final exam will take place 8:00 – 11:00 am on Wednesday, December 12 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%.

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. See the Lab Policy handout for a description of the lab.

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 next lecture on Wednesday.

Academic Dishonesty: The EECS Department policy on academic dishonesty, which applies to EE 105, is stated at http://buffy.eecs.berkeley.edu/~ruth/ac.dis.html