

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

EE 105: Microelectronic Devices and Circuits

Prof. C. J. Spanos

Fall 2000

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.

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

A reader including the Laboratory Manual and the solutions to even exercises in the textbook is available from

Copy Central (Southside)
2560 Bancroft Way
(510) 848-8649

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.

Prerequisite: EECS 40 (see list of topics needed for 105)

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

Textbooks:

- 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 Guidebooks

- 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.
- A. Vladimirescu, *The Spice Book*, Wiley, 1994.

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. The laboratory is integrated closely with the lectures; satisfactory completion of the laboratory is *required* in order to receive a grade in the course.

Homework Assignments and Quizzes: There will be weekly assignments during the semester, distributed on Wednesdays and posted on the class Website, and due at the beginning of lecture the following Wednesday. Homework sets that would have been due on a midterm exam will be due at the beginning of the next lecture on Friday. 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 Friday and posted on the Website.

Academic Dishonesty: see appended copy of <http://buffy.eecs.berkeley.edu/~ruth/ac.dis.html>

Exams and Grading: There will be two midterm exams and a final exam. The midterms will be held on Wednesday, October 11, 2000 and on Wednesday, November 15, 2000. Both midterms will take place at 6 pm in the Sibley auditorium. The final exam will be held Wednesday, from 12:30 – 3:30 PM at location to be announced.

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

Homework 5%, Laboratory, 25%; Midterm I, 15%; Midterm II, 15%, Final exam, 40%.