

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

EE 105: Microelectronic Devices and Circuits

R. T. Howe

Spring 2005

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 two 80-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.

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

Parallel Textbooks: useful for the material after Midterm I.

A. S. Sedra and K. C. Smith, *Microelectronic Circuits*, 5th ed., 2004.

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

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

SPICE references:

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 2 from 7:00 – 8:30 and on Wednesday, April 13 from 6:30 – 8:00 pm and the final exam will take place 5:00 – 8:00 pm on May 18 in a room to be announced. The review sessions will be held Feb. 28, 7:00 – 8:30, 141 McCone Hall, April 11, 7:00 – 8:30, 105 North Gate Hall, and May 9, 7:00 – 8:30, 105 North Gate Hall.

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

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

Your final course grade will be determined *approximately* by the following guidelines:

>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 my Fall 2001 and Spring 2002 EE 105 classes, there were 44% A's, 25% B's, 25% C's, and 6% 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 Tuesday and due at 5:00 pm the following Tuesday in a box labeled "EE 105" located in the Cory Hall undergraduate lounge. 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 Department policy at <http://www.eecs.berkeley.edu/Policies/acad.dis.shtml>