EE 360: Introduction to Semiconductor Devices

Spring 2008

Instructor:

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Web-site: http://courses.engr.uky.edu/ECE/ee360/

Listserv: ee360-Sp08-L

Class Meeting: 1:00pm – 1:50pm, Monday, Wednesday, and Friday, RGAN 203

Texts:

Semiconductor Device Fundamentals by Robert F. Pierret, Addison-Wesley Publishing Company, 1996. ISBN: 0-201-54393-1

Grading:

Homework	15%
Exam #1	25%
Exam #2	25%
Final Exam	35%

Prerequisites:

PHY 232 (General University Physics) and CHE 105 (General College Chemistry I) are required prerequisites.

Objectives and Outcomes:

Upon completion of this course students should demonstrate the ability to:

1. Understand the electronic properties of semiconductor materials.
2. Calculate carrier concentrations and currents in semiconductor devices.
3. Understand the fabrication technologies used to fabricate integrated circuits.
4. Understand the physics and models of semiconductor devices including diodes, bipolar junction transistors, and field-effect transistors.
5. Analyze various device structures and calculate their model parameters.

Homework:

Homework is essential to understand the material presented in this course. Students will typically have one week to complete homework assignments. Assignments will distributed on the course website. Assignments will be collected in class, and no late homework can be accepted because solutions will be made available immediately. If a student will be absent from class, he or she should submit the homework early or make arrangements for another student to submit it. Solutions will be available online after the due date.

Students are allowed and encouraged to work together on the homework, but each student must submit an individual solution set. If a student learns the solution to a problem from another source (human, printed, electronic, etc.), this should be documented in the submitted homework. Directly copying a solution from another student or source is not permitted.

Computer Usage:

Certain homework problems will be most readily solved using a computer. MATLAB is the recommended, but not required, software package for solving these problems, and all solutions will be provided in MATLAB format. The textbook also recommends MATLAB for solving its computer based exercises. The textbook's author has made some useful files available. These can be obtained from the course website or from the Mathworks at ftp://ftp.mathworks.com/pub/books/pierret/. MATLAB is available in the following computer laboratories: Civil Engineering Lab, Agriculture Lab, Anderson Hall Lab, and Chemistry Physics Lab.

MATLAB is in widespread use both in education and industry. Its combination of a straightforward scripting language, a large library of compiled functions, and powerful graphics capabilities allows one to rapidly write useful code. You will find knowledge of MATLAB to be helpful for other courses as well as your future career.

Exams:

There will be two in-class tests and a final exam. Failure to take a test or exam will result in a grade of zero for that test. Permission to take a test at a different time may be granted if and only if the student contacts the instructor **before** the exam date.

Class Attendance:

Students are responsible for all business conducted during scheduled class periods. Announcements concerning homework, exams, and schedules will be made during class.

Academic Offenses:

Cases of cheating or plagiarism will be handled according to the rules in the University of Kentucky *Student Rights and Responsibilities*. These rules have recently changed and students are encouraged to review them at http://www.uky.edu/StudentAffairs/Code/part2.html (section 6.3). If there is any question as to what constitutes cheating or plagiarism please consult the instructor.