Department of Electrical & Engineering and Computer Science
The University of Kansas

EECS 470- Electronic Devices and Properties of Materials Fall, 2008

Catalog Description: EECS 470 Electronic Devices and Properties of Materials. (3) An introduction to crystal structures, and metal, insulator, and semiconductor properties. Topics covered include the thermal, electric, dielectric, and optical properties of these materials. A significant portion of this course is devoted to the properties of semiconductors and semiconductor devices. Prerequisite: PHSX 313 and upper-level eligibility.

Primary Textbook: Fundamentals of Semiconductor Devices, B. Anderson and R. Anderson, McGraw Hill, 2005

Course Objectives: Upon completion of this course, students should understand the basic physics and operating characteristics of the various types of semiconductor devices used in current engineering practice. Students should also develop an appreciation of the basic manufacturing procedures used to manufacture these devices.

Estimated Content:

Engineering Science : 3.0 hours or100%

Instructor: Kenneth R. Demarest

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Office Hours: 8:30 - 9:30 MWF (Eaton)
11:00 - 11:30 MWF (Eaton)
3:00 - 4:00 MWF (Eaton)
By Appointment TR (Nichols Hall)

Grading: The following percentages will be used to arrive at the final grade scores

Exam I 20
Exam II 20
Final Exam. 24
Project 13
Quizzes 10
Homework 13

Final letter grades are determined from the final grade scores using a scale similar to the traditional 90-100 A, 80-90 B, etc..., but can vary from semester to semester. **A passing grade must be earned in each of the three grade categories (exams, quizzes, and homework, project) to earn a passing grade for the course**. Changes announced in class supersede these written instructions.

Homework: Homework will be collected at the beginning of class on a weekly basis. Late homework is not accepted, except for unusual circumstances. Collaboration with classmates is permitted. Copying is *not* permitted and will dealt with by the Associate Dean of Engineering.

Exams: I will announce before each exam whether it will be closed book, closed book with "cheat sheet", or open book.

Quizzes: Quizzes will be unannounced, and always at beginning of class

Make-ups: Make-up exams are given rarely, and only if: 1) I am informed IN ADVANCE, and 2) I deem the reason to be sufficiently meritorious (job interviews and pleasure trips are not). If the reason is illness, I REQUIRE documentation of the illness from a health-care professional. I do not consider a cold to be an illness.

Special Needs: Any student who has a disability that demands special accommodations should contact the instructor personally in order to make arrangements. Also, members of KU sanctioned organizations (band, athletic teams, etc.) that have special needs should also contact the instructor as the need arises.

Academic Misconduct: Instances of cheating may result in expulsion from class and referral to the Dean. Cheating includes, but is not limited to: copying another exam paper, copying another homework paper, copying from solution manuals or previous students' homework papers, having another student do your work, etc.

Syllabus

Week	Topic/Chapter
1-2	Quantum behaviors in semiconductors / Chapter 1
3-4	Homogeneous semiconductors/ Chapter 2
5	Current flow in homogeneous semiconductors/ Chapter 3
6	Nonhomogeneous semiconductors/ Chapter 4
	Exam I (Monday, October 6 - tentative). . . . .
7-9	PN junctions and diodes/ Chapter 5
10-11	Field Effect Transistors/ Chapter 7
12-13	Bipolar Transistors/ Chapter 9
	Exam II (Wednesday, November 19 - tentative). . . . .
14-15	Optical semiconductor devices/ Chapter 11

Final Exam .(comprehensive, Thursday, December 18, 7:30 - 10:00 A.M) . . . .