Syllabus

ECE 344—Semiconductor Devices & Materials

ECE Department, UMass Amherst
Fall 2013

Instructor: Prof. Qiangfei Xia
Office: 201D Marcus Hall
Email: qxia@ecs.umass.edu

Lectures: MWF: 11:15am-12:05 pm (ELAB 303)
Office Hours: MWF: 1:30-2:30 pm or by appointment (Marcus 201D)

TA: Martin Muthee
Email: mmuthee@ecs.umass.edu
TA Office Hours: T Th: 10 -11 am, W: 3-4 pm (all at M5)

Credits: 3
Grading: 20% homework, 30% midterm exam, 50% final exam
The final course grades will be based on a bell curve

Course Objectives:
- Provide the foundations to understand the electronic properties and the physics of charge transport in semiconductors
- Explain the operating principles in semiconductor devices (diodes, capacitors and transistors)
- Inspire perspectives of emerging device technology and future directions for electronics

Lecture Topics: Fundamentals of Semiconductors; Theory of Electrical Conduction; Device Operations (See "Class Schedule" for details)


Suggested reading:
Basics:

Advanced:
Policies & Suggestions:

Auditing policies:
- Auditing students are required to hand in home works (HWs) and to take both midterm and final exams

Homework policies:
- HWs are mandatory; any missing homework will lead to an F grade in this course. If you run out of time, hand in as much you have finished as possible.
- HWs are due at the beginning of the lecture on due date (11:15 am). Late HW will be accepted but 10 points will be deducted for each late hour.
- You are allowed to discuss in group how you are going to solve the problems, but the HWs you submitted should be your own work. HW plagiarism is strictly prohibited and will lead to an F grade in this course.

Exam policies:
- Both midterm and final are closed book exams, but you will be allowed to bring a one-page “cheat sheet” with you. A non-programmable calculator is necessary for the exams.
- Exams are designed on the assumption that you are familiar with all lectures and home works (you are expected to attend all classes).
- Make-up exams will be given only if you provide a valid written excuse (as defined in Undergraduate Rights and Responsibilities) and notify the instructor prior to the missed exam. Other missed exams will be considered failures.
- Final exam is cumulative.

Suggestions:
- The suggested after class/classroom time ratio is 3:1. This is to say, for every single class room hour, you need to spend at least 3 hours afterwards on this course.
- If you have any difficulties in the course material or background knowledge, come to the office hours before you fall behind. There are office hours every day (instructor plus TA).
- Course materials such as homework, homework solutions, class notes, handouts will be uploaded to Moodle, normally once a week.
- Class start at 11:15 am, please arrive on time.