EECS 312
Electronic Circuits I

Instructor Contact Information

Carl Leuschen
Email: leuschen@ku.edu
Office
3014 Eaton, 311 Nichols
Office Hours
11am-11:50am MWF, or by appointment
Additional Information
Try to give me a heads up if you are to stop by at 11am.

Class Time and Location

12-12:50pm MWF, 1136 Learned

Course Hours

Credit Hours: 3

A credit hour is a way to measure the amount of work you're expected to do for a class. It's based on the learning goals of the course and how much time you'll spend on it. During a full length (15-week) semester, you can expect to spend about one hour in class and another two hours on homework or studying each week for each credit hour.

For classes completed in other formats, like an 8-week semester, the time commitment may be different. The exact hours can vary, but you can generally expect to spend a similar amount of time in class and on coursework in total, adjusted for the shorter timeframe.

Instructional Methods

In Person

Course Description

Introduction to diodes, BJTs and MOSFETs, and their use in electronic circuits, especially digital circuits. Prerequisite: Upper-level eligibility. Corequisite: EECS 212.

Key Topics:

1. Diode terminal characteristics and forward biasing.
2. Reverse biasing, Zener diode, and rectifier circuits.
3. Diode-based limiting circuits, special diodes.
4. MOSFET structure, current-voltage characteristics.
5. MOSFET circuit DC analysis and amplifier design.
6. MOSFET circuit small-signal analysis, MOSFET Body effect.
7. Digital-logic inverters.
8. CMOS inverter and dynamic operation.
9. CMOS logical-gate circuits, Latches, flip-flops.
10. Semiconductor memory architecture and RAM.

Learning Outcomes

At the conclusion of this course, students will be able to

- 1. Understand and identify all technical names, bias modes, device equations, and circuit approximations for diodes.
- 2. Understand and identify all technical aspects of MOSFET transistors, including terminal names, bias modes, and device equations.

- 3. Understand the operation of CMOS digital logic circuits, in order to determine or verify characteristic quantities such as logic levels, noise margins, switching times, and power dissipation.

Course Materials

Microelectronic Circuits
Authors: Adel S. Sedra and Kenneth C. Smith
Edition: 7th Edition, 2015

http://people.eecs.ku.edu/~leuschen/

Technology Requirements

Access to a computer with PSPICE for simulations.

Course Assignments and Requirements

Due Date	Name	Type	Points
	Check website for Assignments		

Student Survey of Teaching

You will have multiple opportunities to provide feedback on your experience in this course. Suggestions and constructive criticism are encouraged throughout the course and may be particularly valuable early in the semester. To that end, I will use mid-semester surveys and/or reflection assignments to gather input on what is working well and what could be improved. You will also be asked to complete an end-of-semester, online Student Survey of Teaching, which could inform modifications to this course (and other courses that I teach) in the future.

Grading

The A-F (+/-) grading scale will be used.

Incomplete Grades

You may be assigned an 'I' (Incomplete) grade if you are unable to complete some portion of the assigned coursework because of an unanticipated illness, accident, work-related responsibility, family hardship, or verified learning disability. An Incomplete grade is not intended to give you additional time to complete course assignments or extra credit unless there is indication that the specified circumstances prevented you from completing course assignments on time.

Attendance Policy

Attendance is expected. There will be periodic quizzes that may or may not be announce prior to class. If you need to miss class, you are expected to send and email to me at least two hours prior to the beginning of class.

Late Work/Make-up Policy

Assignments should be turned in at the begging of the class. Late assignments turned in during class will be deducted 5%, after class 10% and an additional 10% for each day afterward (with approval). This is subject to the discretion of the instructor and may be given a zero in certain circumstances.

Academic Integrity

Academic misconduct (cheating, giving help, copying, representing others work as your own …) will not be tolerated. It will result in a failing grade, be reported to the Department/Dean, and may result in further disciplinary action by the University. For details see the Academic Misconduct section of the Timetable.

Subject to Change Statement

Information listed on the syllabus may be subject to change. Check the course website for any modifications.

Student Resources and University Policies

Please visit the Student Resources website (KU Academic Success) for a list of student resources and university policies.

Accommodation

The Student Access Center (SAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If you have a disability for which you wish to request accommodations and have not contacted SAC, please do so as soon as possible. They are located in 22 Strong Hall and can be reached at 785-864-4064 (V/TTY). Information about their services can be found at access.ku.edu. Please contact me privately in regard to your needs in this course.