ECE 3410– Microelectronics I

Course and Instructor Information

Instructor	Dr. Chris Winstead
Office	EL 304E
Phone	797-2871
Email	*chris.winstead@usu.edu*
Office Hours	MW, 10:45–11:30AM
	T, 2–3PM
	(or by appointment)
Course Times	MWF, 9:30–10:20AM
Lecture Location	ENGR 106
Lab Location	EL 104 (Circuits Lab) and
	EL 105 (Design Automation Lab, aka Linux Lab)
Lab Times	Th, all day

Objectives

This professional program course introduces solid-state electronics, emphasizing the analysis and design of rectifying and amplifying circuits. Topics include ideal and non-ideal behavior of operational amplifiers; diodes and their use in rectifiers, limiters, envelope detectors, and DC restoration; MOSFET transistors and circuits, emphasizing single-stage amplifier design; Bipolar junction transistors and circuits, emphasizing single-stage amplifier design.

Textbook

Adel Sedra and Kenneth C. Smith, *Microelectronic Circuits, 6th Edition*, Oxford University Press, 2010.

Grading

Grades will be determined based on a conventional fixed scale, indicated below.

Point Distribution	
Homework	25%
Labs and SPICE	35%
Midterm	25%
Final	25%

Grading Scale					
A	>	93%	C	>	74%
A-	>	90%	C-	>	70%
B+	>	87%	D+	>	67%
B	>	84%	D	>	64%
B-	>	80%	D-	>	60%
C+	>	77%	F	<	60%

LABORATORY

There is a laboratory co-requisite for this course. All students should supply their own protoboards, hookup wire, electronic components, tools and part cases. Most of these materials are available from the ECE Store in room EL 104. Basic tools, such as tweezers, needle-nozed pliers, wire cutters and wire strippers may also be helpful.

Each student must maintain his/her own bound laboratory notebook. Students are expected to follow the lab book requirements outlined in the lab handouts. A **bound notebook** (not spiral bound) is expected. All pre-lab work should be recorded in the lab book **in ink**. Work should be recorded directly in the lab book while you are doing it.

For each lab assignment, students are expected to write a formal lab report summarizing design choices, measurement results and conclusions. These reports must be typed and clearly organized.

Lab work may be performed in groups of up to three students. All lab notebooks and reports must be written individually.

EXAMS

Midterm and final exams will be open-book and open-note, and calculators are permitted. There will be one fifty minute midterm exam, and one two-hour final exam.

ACCESSIBILITY

In cooperation with the Disability Resource Center, reasonable accommodation will be provided for qualified students with disabilities. Please meet with the instructor during the first week of class to make arrangements. Alternate format print materials (large print, audio, diskette or Braille) will be available through the Disability Resource Center.

CHEATING

Obviously, cheating is not allowed. You are not allowed to use the solutions manual on homework assignments[1]. You may work on assignments in groups, but verbatim copying is not permitted. Anyone caught cheating will fail the course. If you have trouble with an assignment, seek help from the instructor and/or TA. Cheating is easily detected, and is not worth the risk.

LATE POLICY

No late work will be accepted unless there is a genuine medical or family emergency (e.g. serious illness or death in the family). Anything involving family events or personal travel does not qualify as an emergency unless it involves a hospital visit, ambulance ride or similarly serious event. Consideration will be given to students who are traveling on university business to attend competitions, conferences or interviews.

HARASSMENT

It is each student's responsibility to maintain a professional and courteous atmosphere during sessions in the laboratory, or during group studies outside of scheduled class hours. No form of harassment will be tolerated, where harassment is understood to be **any behavior** that interferes with another student's equal participation in the course. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran status, sexual orientation, gender (identity and/or expression), age, disability, and nationality. As a professional engineer, you will be expected to work effectively alongside persons from a wide variety of backgrounds. The same is true for this class.

[1] In this course we will try using custom homework assignments when possible. In that case, you may refer to the solutions manual as a source of example problems, and it will not be considered cheating.