ENR 130 Analog Electronics

Summer 2024

Course Credits: 4
Contact Hours: 56 hours
Instructor: TBA
Email:TBA

COURSE OBJECTIVES

This course introduces students to the fundamental principles and techniques used in the design and analysis of analog electronic circuits. The course begins with an exploration of basic concepts such as Ohm's Law and related semiconductor devices. Practical skills in basic circuit design and measurement will be emphasized. Through lectures, laboratory experiments, and practical projects, students will learn how to analyze and design analog circuits for a variety of applications in electronics, telecommunications, and instrumentation.

Upon Completion of this Course, students will be able to:

1. Gain a comprehensive understanding of analog electronic circuits and systems.
2. Understand the operating principles and characteristics of semiconductor devices commonly used in analog electronics.
3. Interpret the performance of analog electronic circuits through quantitative measurements and analysis.
4. Apply Ohm ' s Law and related measurement techniques to analyze the behavior of electronic circuits.
5. Demonstrate proficiency in the design and analysis of basic analog electronic circuits.

PREREQUISITES

ENR 119 Introduction to Music Technology

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
5 Labs	25 Points
2 Lab Report	20 Points
Practical Project	10 Points
Midterm	20 Points
Final Exam	25 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

A ≥ 90 > B ≥ 80 > C ≥ 70 > D ≥ 60 > F.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Microelectronic Circuit Analysis and Design, 4th Edition, Donald A. Neamen McGraw-Hill.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Semiconductor devices and basic applications: Semiconductor materials and diodes Topic 2: Ohm's Law Topic 3: Diode circuits Topic 4: The field-effect transistor **Assessments:**

	Lab#1
Module 2	**Topics:** Topic 5: Basic FET amplifiers Topic 6: The bipolar junction transistor Topic 7: Basic BJT amplifiers Topic 8: Frequency response **Assessments:** Lab#2 Lab Report#1
Module 3	**Topics:** Topic 9: Output Stages and power amplifiers Topic 10: Analog electronic: ideal operational amplifiers and Op-amp circuits Topic 11: Integrated circuit biasing and active loads Topic 12: Differential and multistage amplifiers **Assessments:** Lab#3 Midterm
Module 4	**Topics:** Topic 13: Feedback and stability Topic 14: Operational amplifier circuits Topic 15: Nonideal effects in operational amplifier circuits Topic 16: Application and design of integrated circuits **Assessments:** Lab#4
Module 5	**Topics:** Topic 17: Digital electronics Topic 18: MODFET digital circuits Topic 19: Bipolar digital circuits Topic 20: Final Reviews **Assessments:** Lab#5 Lab Report#2 Practical Project Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

1) Late assignments are not acceptable and are subjected to grade deductions.
2) Assignments submitted in the wrong format will be counted as not submitted.
3) Failure to submit or fulfill any required course component results in failure of the class.
4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACEDEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university

administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.