ENCE 241 – Analog Circuit Lab
Lecture 0: Administrative Matters

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August 30, 2024

Course Structure

- Fall 2024: August 26 – December 6
- Time and Class Location:

  Friday 9:00 AM - 11:50 PM

  Location: EASC Building, Room 3069

- Class Participation and Reading

Admin Matters

- Office: Room 3007, E.A.S.C. Building
- Phone: (410)-651-6478
- Email: lzhang1@umes.edu
- Web:
- Office hours:

  Tuesday 3:00 PM – 5:00 PM, Wednesday: 3:00 PM – 5:00 PM,

  and other time by appointment only.

Course Objectives

- Introduction to basic measurement techniques and electrical laboratory equipment (power supplies, oscilloscopes, multimeters, etc.). Experiment concerning principles taught in ENGE 240. The laboratory will cover basic resistive circuits, Ohm's law, Kirchhoff's law, voltage and current division law, and Thevenin's, and Norton's equivalent circuits.
- Use basic test and measurement equipment necessary to evaluate the performance of simple circuits.
- Understand basic limitations, inaccuracies, and tolerances of the test equipment and components.
- Understand procedures. Design circuits with efficient reliability and effectively achieve the desired results.
- Use good techniques for drawing circuits and wiring diagrams.
- Wiring and troubleshooting circuits on the breadboard.
- Simulate, analyze, and evaluate designed circuits with professional software. Teamwork in the lab to maximize the results.
- Write Technical reports for laboratory experiments.

Prerequisite and Textbook

- **Prerequisite/co-requisite: MATH 211/ENGE 240**

- Lab manuals, datasheets, and equipment instructions will be provided in class and posted online.

Lab and Lab Participation

- Each lab has four major components: 1) the Prelab, 2) in class quiz, 3) the simulation/implementation work done in the lab, and 4) the lab report.
- All students are expected to attend all labs. Lab attendance is regarded as an obligation as well as a privilege and all students shall attend regularly and punctually all labs in which they are enrolled. Excessive unexcused absences for any reason will result in either a low grade or course failure. If you cannot attend lab, a courtesy call or an email to the professor before the lab time is required and appropriated.
- **Each absence without proper reason and communication in advance to the instructor will result in a 10% reduction in the final grade and no make-up will be provided. Three absences will automatically lead to an 'F' final grade.**
- If you missed a lab with a proper reason, contact the instructor for the approval to schedule a make-up.
- Eating, drinking, or chewing gum is not permitted in the classroom.
- Your cell phone has to be turned off and kept in your handbag or pocket while you are in the lab.

Assignments

- There are two types of assignments for each lab, Prelab and Postlab (lab report).
- The Prelab will be provided in class one week in advance. **The Prelab is due on the lab day. Only those who have finished Prelab are allowed to do the lab experiment.** Others should not enter the lab room until the Prelab is finished. No late submission will be accepted ('0' grade).
- **Postlab is due on the following lab day. All past-due submissions will get a '0' grade.** All the posts must be submitted via Canvas electronically. Only '.doc' and '.pdf' formats will be accepted. You are required to use the lab report template posted on the Canvas in preparing the Postlab.
- All assignments are individually pledged. Nobody shall share the same writing as a group or cross groups. If any Prelabs, quizzes, and lab reports are identified to be plagiarized, all involved students will get a '0' for the lab.
- All materials submitted for evaluation (i.e., homework, quizzes, etc.) must have the following identifications: a) student's name and ID number, and b) date of submission.

Quizzes/Exams

- A quiz with 10 - 20 minutes will be given in every lab.
- The final exam will be held in the lab (classroom) **TBD**.
- No make-up exams will be given and the grade for a missed exam will be zero unless the student has a legitimate excuse documented properly (e.g., a letter from a court clerk that he/she must appear in a court, a letter from a physician that he/she is sick). The student must make an appropriate arrangement with the instructor for an excused missed exam.

Grading Policy

- A grade of "I" will not be given to students who have a failing grade going into the finals.
- Grades will be based on lab participation/completeness, Prelabs, quizzes, lab reports, and the final exam.
- Extra credits may be given for special projects.

- **Tentative Point Allocation:**

Prelab	15%
Quizzes	15%
Lab Reports	30%
Final Exam/Project	40%
Total	100%

Grading

- **Tentative Grading Scale**

Grades will be based on the following numerical guidelines:

Average Range	Grade
90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

Course Content

	Experiments	Topic
Week 1		
Week 2		Safety lecture and lab equipment tutorial
Week 3	1	Lab equipment
Week 4	2	DC circuits, resistors, and resistive sensors
Week 5	3	Series and Parallel
Week 6	4	Kirchhoff Law
Week 7	5	Time-varying signals
Week 8	6	Circuit Simulation with PSpice
Week 9	7	Nodal and Mesh Analysis
Week 10	8	Superposition theorem
Week 11	9	Thevenin theorem
Week 12	10	Norton theorem
Week 13	11	Maximum power transfer
Week 14	12	Op-Amp Characteristics and Applications
Week 15	13	RC circuit transients
Week 16	14	LC circuits