EENG 2610 - Circuit Analysis

Course Description:

Introduction to electrical elements, sources and interconnects; Ohm's law, Kirchhoff's laws, superposition and Thevenin's theorems; Resistive circuits, OP Amp, RL and RC circuits, AC circuits and sinusoidal analysis.

Learning Objectives:

Students will

1. Understand abstract lumped circuit model, the attributes of circuit elements (including dependent/independent voltage/current sources, resistances), Ohm's law.

2. Be able to analyze lumped circuit models using Kirchhoff's laws (KCL and KVL), nodal method, and loop method.

3. Be fluent with basic circuits (i.e., dividers, resistor combinations and transformations), and circuit analysis methods including linearity, superposition, Thevenin, Norton.

4. Be able to analyze OP-Amp models and circuits.

5. Understand the reasoning of analysis methods for transients in linear DC circuits with capacitors and inductors, including first order and second order circuits.

6. Understand AC circuits: concepts of average and instantaneous power, RMS, and maximum power transfer.

7. Be familiar with AC circuit analysis: Phasor method, impedance method, and basic frequency-domain analysis methods.

Prerequisite: MATH 1720 Calculus II

Co-prerequisite: PHYS 2220/PHYS 2240 Electricity and Magnetism (MATH 3410 Differential Equations I and EENG 2611 for Electrical Engineering students)

Lectures: Tuesday & Thursday, 1:50PM - 3:10PM, NTDP E266.

Lecture notes and other supplementary materials will be posted on Canvas.

Instructor:

Dr. Yusheng Wei. Office: NTDP B261. Email: Yusheng.Wei@unt.edu.

Office Hours: Tuesday, 3:10PM - 5:10PM

TA: TBD. Email: TBD@my.unt.edu.

Textbook: (Required)

Fundamentals of Electric Circuit, Charles Alexander and Matthew Sadiku, 7th Edition, McGraw-Hill (ISBN-13: 9781260226409).

Grading Policy:

Homework: 15%

Quiz: 20%

Midterm Exam 1: 20% (Date TBD)

Midterm Exam 2: 20% (Date TBD)

Final Exam: 25% (1:00 pm - 3:00 pm, December 5)

Homework Policies:

• Homeworks are due at the end of class on the due date. Solutions to the homework assignments will be posted on the course web page after the submission deadline.

• Late assignments will not be accepted after 24 hours of the submission deadline.

• It is fine for you to discuss homeworks with your classmates. However, each of you must write and turn in your own answer sheets. For copied assignments (e.g., two or more answer sheets that are too obviously similar), no credit will be given (equivalent to a zero grade).

Exam & Quiz Policies:

• Failure to show up for an exam results in receiving no credit for that exam. In such case, there will be no second chance for you to retake the missed exam, unless under very special circumstances (e.g., family or medical emergency).

• Any academic misconduct (e.g., cheating, plagiarism) should be avoided at all cost. If two or (more) answer sheets are found to be almost identical (especially in the errors and mistakes), they will receive zero credits.

General Policies:

• **Rules of Engagement:** See these Engagement Guidelines (https://clear.unt.edu/online-communication-tips) for more information.

• **Course Evaluation:** Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.

• **Attendance Policy:** Visit the UNT Attendance Policy (https://policy.unt.edu/policy/06-039) to learn more.

• **Academic Integrity Standards and Consequences.** According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

• **ADA Accommodation Statement.** UNT makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their des-

ignated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website at https://studentaffairs.unt.edu/office-disability-access. You may also contact ODA by phone at (940) 565-4323.

• **Emergency Notification & Procedures.** UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.