

EENG 2610.003 - Circuit Analysis

Spring 2021

Course Description:

Introduction to electrical elements, sources and interconnects; Ohm's law, Kirchhoff's law, 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, 13:00 - 14:20, Zoom: <https://unt.zoom.us/j/3316696356>.

Instructor:

Hung Luyen. Office: NTDP B232. Email: Hung.Luyen@unt.edu.

Office Hours: Tuesday & Thursday, 10:00 - 11:00, Zoom: <https://unt.zoom.us/j/3316696356>

TA:

Ramya Shuba Gogineni. Email: RamyaShubaGogineni@my.unt.edu

Office Hours: Tuesday & Thursday, 15:00 - 16:00.

Zoom: <https://zoom.us/j/6675030540?pwd=NUJjVVBobW82dUZlYzIvUVhwSXNKZz09>

Textbook: (Required)

Basic Engineering Circuit Analysis, J. D. Irwin and R. M. Nelms, 11th Edition, Wiley.

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

Grading Policy:

Attendance and Participation: 5%

Homework: 25%

Midterm Exam 1: 20% (Take home, Date TBD)

Midterm Exam 2: 20% (Take home, Date TBD)

Final Exam: 30% (Take home, 14:30, April 27, to 14:30, April 28)

General Policies:

• **Technical Assistance:** Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

UIT Help Desk: UIT Student Help Desk site (<http://www.unt.edu/helpdesk/index.htm>);

Email: helpdesk@unt.edu; Phone: 940-565-2324; In Person: Sage Hall, Room 130

For additional support, visit Canvas Technical Help (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

• **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.

COVID-19 Impact on Attendance: While attendance is expected as outlined above, it is important for all of us to be mindful of the health and safety of everyone in our community, especially given concerns about COVID-19. Please contact me if you are unable to attend class because you are ill, or unable to attend class due to a related issue regarding COVID-19. It is important that you communicate with me prior to being absent so I may make a decision about accommodating your request to be excused from class.

If you are experiencing any symptoms of COVID-19 (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

Class Materials for Remote Instruction: UNT spring schedule requires this course to have fully remote instruction. Additional remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Information on how to be successful in a remote learning environment can be found at <https://online.unt.edu/learn>.

Statement on Face Covering: Face coverings are required in all UNT facilities.

• **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 accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of 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 accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

• **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.

• **Class Recordings & Student Likenesses.** 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.