

EENG 2610.003 - Circuit Analysis

Spring 2022

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, 16:00 - 17:20, NTDP B142.

Instructor:

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

Office Hours: Tuesday & Thursday, 9:00 - 10:00; Zoom: <https://unt.zoom.us/j/3316696356>.

TA: To be announced later.

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: 15%

Quiz: 15%

Midterm Exam 1: 20% (Date TBD)

Midterm Exam 2: 20% (Date TBD)

Final Exam: 25% (1:30 - 3:30 pm, May 12)

Homework Policies:

- There will be about 6 homework assignments during the semester.
- 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 homework assignments will not be accepted. I cannot grant extensions on assignments, since this would keep other students from being able to access the solutions in a timely manner.
- I will drop each student's lowest homework score at the end of the semester. This means that there is no penalty if a student has to miss turning in one of the homework assignments.
- 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 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).

General Policies:**• Technical Assistance:**

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. For full information regarding academic integrity processes, please see the University policy at <https://policy.unt.edu/policy/06-003>.

- **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 designated 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.

- **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.