

University of North Texas, College of Engineering

EENG 2610: Circuit Analysis

Fall 2025

Tuesday, Thursday 2:30 – 3:50 PM

NTDP K120

Instructor

- Shahram Rohani, Email: shahram.rohani@unt.edu
Office Hours: (Room E245B) T/TR 4:00 – 4:50 PM
- TA: Chandrasekhar Challa, Email: ChandrasekharChalla@my.unt.edu
Office Hours: (ROOM B250) T/TR 1:00 – 2:30 PM

Check Canvas frequently for updated class information.

Course Description

- Introduction to electrical elements, sources and interconnects. Ohm's law, Kirchhoff's law, superposition and Thevenin's theorems. Resistive circuits, Op-Amp circuits, transients in RL, RC, and RLC circuits are introduced. Finally, AC sinusoidal analysis, phasors, power, and frequency response are covered. Credit hours: 3

Prerequisites

- MATH 1720, co-requisite: PHYS 2220/2240 for all and EENG 2611 for Electrical Engineering students.

Required Textbook

- Fundamentals of Electric Circuits, 7th Edition, McGraw Hill, 2021
Authors: Charles Alexander and Matthew Sadiku
ISBN: 978-1-260-22640-9

Course Requirements and General Policies

- The student is required to attend all scheduled lectures. Lectures and class discussions will contain vital information needed to do well on the exams. The student can be dropped from the course for three (3) unexcused absences in Lecture. An excused absence can only be guaranteed by obtaining, in advance, Instructor authorization.
- Please do not wait until the last minute. If you are having trouble with this class, please take advantage of The Learning Center's Lead Tutors. You can access all their services through their website: <https://learningcenter.unt.edu/tutoring>. They also have a video that overviews their services for the fall, including how to schedule an appointment! Here's the link: <https://www.youtube.com/watch?v=HOggBsi3VME>. You should also take advantage of the TA's office hours. I am also available by email.
- The UNT Catalog procedures on cheating and plagiarism will be enforced. It is the duty of all students to protect their work, so it is not available for others to represent as their own. This is especially true of files that are generated on the computer. Students who knowingly allow others to use their work are partners in this unethical behavior.
- Please visit <http://www.unt.edu/csrr> for your rights and responsibilities.

Assignments and Exams

- Homework will be assigned on a weekly basis and must be submitted by the due date and time and either uploaded to Canvas or turned in at the beginning of the class period according to the given instructions each week. Late homework will not be accepted.
- There will be both announced and unannounced quizzes administered during the semester to evaluate understanding of relevant material. No make-up quizzes will be given.
- There will be no extra credit. There will be no make-up quizzes or examinations given unless prearranged with the instructor for a university approved excused absence. The final examination will be comprehensive over the entire semester's work.
- Exams will be based on text readings, handouts, class exercises, quizzes, class lectures and discussions. Students are responsible for all text material, regardless of whether we review the text material in class or not. **No make-up exams will be given.**
- Each student should retain graded lecture notes, pop quizzes, homework, tests, software-generated files, and laboratory reports to document errors in recorded grades.
- Requests for review of graded work must be emailed to the TA within a week of which such work is returned to the students. The instructor should be cc'd on this email. The request should be accompanied by a written justification of the request including any supporting data.

Grading Policies

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| • Homework | 20% |
| • Quizzes | 20% |
| • Exam 1 | 20% |
| • Exam 2 | 20% |
| • Final Exam | 20% |
| • Final accumulated number score is on a 100-point scale. | |

Grade Distribution

90.0% - 100%	A
80.0% - 89.9%	B
70.0% - 79.9%	C
60.0% - 69.9%	D
59.9% & Below	F

Disability Accommodation

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, please contact the Office of Disability Accommodation [ODA website \(http://www.unt.edu/oda\)](http://www.unt.edu/oda) at 940-565-4323.

Useful Links

- UNT Academic Calendar: <https://registrar.unt.edu/registration/fall-registration-guide> Also for schedule of classes and exams, etc.)
- Health & Wellness Center: <https://studentaffairs.unt.edu/student-health-and-wellness-center/>

Course Outline and Tentative Schedule

You can find the lectures slides and problem assignments on Canvas.

Week	Date	Topics	Reading
1	19-Aug	Voltage, Current, Power, Tellegen's	1.1-1.5
1	21-Aug	Circuit elements, Ohms' law, KCL, KVL	1.6, 2.1-2.4
2	26-Aug	Series & Parallel Circuits, Resistor Combinations	2.5-2.6
2	28-Aug	Wye/Delta, Dependent Sources	2.7-2.8
3	2-Sep	Nodal Analysis	3.2-3.3
3	4-Sep	Loop Analysis	3.4-3.6
4	9-Sep	Linearity, Superposition	4.2-4.3
4	11-Sep	Source Transformation, Thevenin's Theorem	4.4-4.5
5	16-Sep	Norton's Theorem, Max power transfer	4.6-4.8
5	18-Sep	Exam 1 review, Op Amp circuits	5.1-5.8
6	23-Sep	Exam 1	
6	25-Sep	Op Amp circuits, Capacitors, Capacitor Combinations	6.1-6.3
7	30-Sep	Inductors, Inductor Combinations; RC Op Amp circuits	6.4-6.6
7	2-Oct	First-order Circuit, Transient Response	7.1-7.3
8	7-Oct	Pulse response, Second-order circuits	7.5-7.6; 8.1-
8	9-Oct	Second-order circuits, oscillations	8.5-8.6
9	14-Oct	AC: sinusoids, forcing functions, phasors	9.1-9.3
9	16-Oct	Phasors, Impedance & Admittance, Phasor diagram	9.4-9.7
10	21-Oct	AC Circuit Analysis	10.1-10.3
10	23-Oct	AC Circuit Analysis	10.4-10.6
11	28-Oct	Instantaneous/Avg power; Max Avg Power Transfer	11.1-11.3
11	30-Oct	RMS Values, Apparent Power, Exam 2 review	11.4-11.5
12	4-Nov	Exam 2	
12	6-Nov	Complex Power, Power Factor correction	11.6-11.8
13	11-Nov	Frequency Response, Bode plots	14.1-14.4
13	13-Nov	Resonant Circuits, Filters	14.5-14.8
14	18-Nov	Magnetically Coupled Circuits	13.1-13.2
14	20-Nov	The Ideal Transformer	13.5
25-Nov	27-Nov	No lecture Thanksgiving	
15	2-Dec	Review for final exam	
15	4-Dec		
16	9-Dec	Final Exam	

The final exam will be on Tuesday, December 9, 2025 from 1:30 to 3:30 PM.

<https://registrar.unt.edu/exams/final-exam-schedule/fall.html>

Class Evaluation by Students

The SPOT (Student Perceptions of Teaching) evaluation is a requirement for all organized classes at UNT and is available for your input at the end of the semester.

Course Learning Outcomes

The Course Learning Outcomes (CLOs) are listed below and are evaluated by surveys of self-assessment from students at the beginning and end of the semester. The results become part of ABET accreditation reports of the EE department.

- [CLO-1] Understand abstracted lumped circuit model, the attributes of circuit elements (including dependent/independent voltage/current sources, Resistances), Ohm's law.
- [CLO-2] Analyze lumped circuit models using Kirchhoff's laws (KCL and KVL), nodal method, and loop method.
- [CLO-3] Be fluent with basic circuits (i.e., dividers, resistor combinations and transformations), and circuit analysis methods including linearity, superposition, Thévenin, Norton.
- [CLO-4] Ability to analyze Op-Amp models and circuits.
- [CLO-5] Understand the reasoning of the analysis methods for transients in linear DC circuits with capacitors and inductors, including first order and second order circuits.
- [CLO-6] AC circuits: Phasor method, impedance method, and basic frequency-domain analysis methods.
- [CLO-7] AC circuits: concepts of average and instantaneous power, RMS, and maximum power transfer
- [CLO-8] Understand frequency response, Bode plots, filters, resonant circuits
- [CLO-9] Learn how to analyze coupled coils, mutual inductance, and transformers.

Course Technology and Skills Required for this class

Students will need access to a set of minimum technological resources and skills to succeed in this class.

Minimum Technology Requirements

The students are required to have:

- Computer
- Reliable internet access and web browser
- Canvas Technical Requirements (<https://clear.unt.edu/supported-technologies/canvas/requirements>)

Computer Skills and Digital Literacy

Course-specific technical skills learners must have to succeed in the course:

- Using Canvas for accessing materials and grades, as well as submitting files if needed
- Converting files to PDF
- Using email with attachments
- Downloading and installing software
- Using spreadsheet programs

Technical Assistance

Here at UNT there is a Student Help Desk that you can contact for help with Canvas or other technology issues.

UNT Help Desk: <http://www.unt.edu/helpdesk/index.htm>

Email: helpdesk@unt.edu

Phone: 940-565-2324

In Person: Sage Hall, Room 330

Walk-In Availability: 8am-9pm

Telephone Availability:

- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

Laptop Checkout: 8am-7pm

*** Information provided in the syllabus is subject to change according to circumstances.**

