University of North Texas, College of Engineering
Department of Electrical Engineering

EENG 2610: Circuit Analysis

Spring 2026
Section 001: Tuesdays and Thursdays 2:30 - 3:50 PM
Classroom: D201

Instructor

- Dr. R. Thomas Derryberry, Office: NTDP B240 Email: tom.derryberry@unt.edu
  Office Hours: Monday and Wednesday, 2:30 – 3:50
  Tuesday and Thursday, 10:00-11:00 AM and 4:00 – 5:00 PM
  (Additional appointments can be requested by email using your **my.unt.edu** account.)

  NOTE: I will correspond via email **ONLY** if you use your **my.unt.edu** student account.
  Anything else will be ignored and deleted.

  While I want to make myself as available as possible to each of you, I do have to place some limitations on when I can be contacted. I would prefer that most general questions go through the Q & A forum in the Discussion Board area. If you have a general question about the course or assignments, please post it there. Either I will answer it, or, one of your classmates will. This way we can all benefit from questions asked, and they can be answered in a venue that the whole class can see. You may also want to find someone in class to be a "buddy" with. This will give you at least one other person who you can email with questions.

  If you have a private question, please contact me via email and I will respond within 24 hours on weekdays (usually sooner). Please do not expect a response over the weekend.

- GA: TBD, Office Hours: TBD, Email: TBD

Required Textbook

- Fundamentals of Electric Circuits, 7th Edition, 2021, Author: Charles Alexander and Matthew Sadiku, Publisher: McGraw-Hill, ISBN-13: 9781260226409

Course Description

- Introduction to electrical elements, sources and interconnects, Ohm's law, Kirchoff's law, superposition and Thevenin's theorems to analyze resistive, Op-Amp, RC, RL, and RLC circuits including sinusoidal analysis and frequency response.

Prerequisites
- MATH 1720 Calculus II

Co-requisite
- PHYS 2220/PHYS 2240 Electricity and Magnetism

Course Webpage
- ALL course related material will be posted on the course webpage which is available through Canvas (https://unt.instructure.com).

Course Objectives
By the end of the course, you will learn
- Electrical elements, their interconnects, and how to analyze basic RLC and op-amp circuits making use of your newly acquired skills using:
    - Ohm's Law
    - Kirchoff's Law
    - Thevenin's and Norton's Theorems
- Sinusoidal analysis of basic RLC circuits.
- Single and Multiphase circuit analysis
- Filter Design

Course Learning Outcomes (CLOs)

Course Learning Outcomes (CLOs), that is, the areas for student learning in this course are:

[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.Boolean Algebra, Switching Functions and Canonical Forms

[CLO-3] Fluency with basic circuits (i.e., dividers, resistor combinations and transformations), and circuit analysis methods including linearity, superposition, Thévenin, Norton Sequential circuit elements and sequential logic circuits

[CLO-4] Ability to analyze circuits with ideal Op-Amps.

[CLO-5] Understand 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] AC circuits: three-phase circuits

[CLO-9] Learn how to analyze coupled coils, mutual inductance, and transformers.

[CLO-10] (Time permitting)Understand frequency response, Bode plots, filters, resonant circuits.

Course Requirements and General Policies

- Class attendance is mandatory however roll call will not be conducted. Research has shown that students who attend class are more likely to be successful. You should attend every class unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the Student Attendance and Authorized Absences Policy. If you cannot attend a class due to an emergency, let me know prior to class in order to be considered for possible make up work. Concisely in words: 1) inform me of your absence prior to class, and 2) be prepared to disclose substantiating documentation of your absence. Your safety and well-being are important to me.
- Lectures and class discussions will contain vital information needed to do well on the exams. Canvas will be your primary electronic interface for this course e.g., all announcements, notes, assignments, etc.
- Students are required to come prepared to every class with the material discussed in the previous class.
- Everyone must turn in individual homework. Homework must be done individually (you will learn the most from this). Any evidence of group participation or simply copying other's homework will be treated and interpreted as academic dishonesty.
- Please remember to turn off phones prior to class. Please note that portable phones, pagers, and late arrivals are disruptive to the instructor and to your peers. The use of cell phones, beepers, or communication devices is disruptive and is therefore absolutely prohibited during class or while taking exams or quizzes. Turn off your cell phone while in class. If I catch you using these devices, your final grade will be reduced by 10% for each and every transgression and you will be asked to leave the class. Except in emergencies, students using such devices must leave the classroom for the remainder of the class period. I know that some of you may wish to take notes directly on your computer and I have no problem with that. If however, you choose to access your email, search the web, play games, or instant messenger your friends during class, you will have 5% deducted from your final grade for each and every transgression. This penalty will be at the sole discretion of the instructor. If for some reason I am late arriving to class, it will be because of circumstances beyond my control. You are expected to remain for 15 minutes past the scheduled class start time while I attempt to communicate my situation and relay instructions.
- Please visit http://www.unt.edu/csrr for your rights and responsibilities.

Disability Accommodation

- The University of North Texas 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 (http://www.unt.edu/oda). You may also contact ODA by phone at (940) 565-4323.

Assignments, Quizzes, and Exams

- **Students are expected to practice good time management skills. Hence there will be a 30% reduction on assignments received within 24 hours after the due date/time and no emailed assignments will be accepted** except in extenuating circumstances. Homework is due **before** the class in hardcopy form. There are no extra credit opportunities for this course.
- Exams will be based on textbook readings, handouts, class exercises, class lectures, discussions, and homework assignments. Students are responsible for all text material, regardless of whether we review the text material in class or not.

Successful Completion of the Course

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom's habits of engagement and I also encourage you to review UNT's student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct) (https://deanofstudents.unt.edu/conduct).

The best way to ensure you pass this course with the grade you desire is to work consistently throughout the semester. In any engineering discipline, course topics always build one upon the other, which makes it very difficult to catch up later if you fall behind. I will not entertain any pleas for extra credit or offers to do additional work.

Secret to Success in this Course (Shsssh, don't tell anyone!)

- To do well in this course, you should be thoroughly familiar with this material. However, several years of research and practice including many trial and error attempts have resulted in the development of this long sought after but elusive recipe to success. The best kept secret to achieving success in this course is cordially shared with you below:
  1. Read and comprehend the required text (Yes, you have to read!).
     a. Know and explain how to correctly solve the examples provided in the text independently.
  2. Know and explain how to correctly solve the homework assignments independently.
  3. Know and explain how to correctly solve the programming assignments independently.
  4. Arrive on time, engage in, and practice active listening for all of the class lectures.
- By the way, there are rumors this recipe works very well when applied to other courses.

Please do not wait until the last minute!! If you are having trouble with this class, please take full advantage of the vast resources available to you:

1. **Stop by my office during my office hours. I am also available by email.**
2. **Reach out to the grader.**
3. **Take advantage of the IEEE's recitation sessions throughout the semester.**
4. **Take advantage of UNT Tutoring Services.**
5. **YouTube**
6. **Etc.**

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Grading Policies

- There will be no extra credit.
- No make-up quizzes or exams will be offered unless **prearranged** with the instructor for a university approved absence. (Defined by UNT Policy 06.039.)
- You have 1 week to contest any grade once returned.
    - Assuming there is a GA/TA for the course, you must **first** contact them regarding a grade dispute prior to seeing me.

COURSE PERFORMANCE MEASURES	
Homework (≥ 11)	15%
Quizzes (Unannounced) (≥ 6)	25%
Midterm Exam	30%
Final Exam	30%
Total	100%

- Keep all of your graded assignments, quizzes, and tests for study and review. You should track your own progress using Canvas or other appropriate means and be aware of current grades throughout the term however the **official gradebook** will be my **Excel spreadsheet**. I will make all the effort to return the graded assignments, but it is your responsibility to collect back the graded assignments from the grader or the instructor if it is not given back to you.
- A composite course score will be computed for the grading assessment. Failure to achieve passing performance for the composite score will result in a final course grade of **F**. Once passing performance has been determined, the final grading for the composite course score will be done as follows: **A** > 90%, 90% > **B** > 80%, 80% > **C** > 70%, 70% > **D** > 60% and **F** < 60%. Grades will be curved if deemed necessary. If a curve is deemed necessary, the minimum expectation to pass with a **D** is 50%.
- Grades cannot be changed after they have been electronically entered into the university's system except for instructor error. Any extenuating circumstances that may adversely affect your grade must be brought to my attention before the final course grades are recorded. To be considered, such circumstances must be unusual, unavoidable, and verifiable.

Academic Dishonesty

- All the provisions of the University code of academic integrity apply to this course. Any student found to have participated in academic dishonesty will receive an F in the class, a record of the offense will be kept in the Office of the Dean of Students and may be subject to further disciplinary action. Acts of academic dishonesty include but are not limited to: academic fraud (e.g. changing solutions to appeal a grade), copying or allowing one's work to be copied, fabrication/falsification, plagiarism, sabotage of others' work, substitution (e.g. taking an exam for someone else). In addition, it is my understanding and expectation that your signature on any test or assignment means that you neither gave nor received unauthorized aid. For homework and lab assignments, while discussion is allowed, direct copying is not, and students must turn in individual submissions. Realize that mastery of the material in the homework and lab assignments will be essential for good performance on the exams! All students are required to know, observe, and help enforce the UNT Code of Student Academic Integrity.

Course Outline and Tentative Schedule

All course materials, including syllabus, lecture notes, homework assignments, and grades are available in Canvas at https://unt.instructure.com

- **Section 001:**
  - **First Day of Class, Jan. 13, 2026, Tuesday, 2:30 - 3:50 PM.**
  - **Midterm Exam (Tentative) Thursday, March 5, 2026, 2:30 – 3:50 PM**
  - **Final Exam Tuesday, May 5, 2026, 12:30 – 2:30 PM.**

TOPIC	DESCRIPTION
1	Course Introduction – Voltage, Current, Power, Tellegen's, Circuit Elements, Ohm's Law, KVL, KCL
2	Resistor Combinations, Wye/Delta, Sources
3	Nodal and Loop Analysis
4	Linearity, Superposition, Thévenin, Norton, Max pwr transfer
5	Op-Amps Model and Circuits
	Midterm Exam
6	Capacitors, Inductors, Combinations
7	First-order Circuit, Transient Response, Pulse response, RC Op-Amp circuits
8	Second-order circuits, oscillations
9	AC: sinusoids, forcing functions, phasors, phasor diagrams
10	Impedance and Admittance - AC analysis, Instantaneous and average power
11	Power, Maximum Power Transfer, RMS, Power factor, correction, Three phase systems
12	Coupled magnetic circuits, Transformers
13	(Time Permitting) Frequency Response, Bode plots, Bode plots sum, filters, resonant frequency

Useful Links

- UNT Catalogs: http://www.unt.edu/catalog/
- Office of the Registrar: http://essc.unt.edu/registrar/ (schedule of classes and exams, etc.)
- Eagle Student Services Center: http://essc.unt.edu/
- Canvas: https://unt.instructure.com

Last updated: 12/02/2025