Course Information

Meeting day and time: TR, 10:30 am – 11:50 am
Room: Education Building 309
Final Exam: Thursday, May 11th, 10:00 am – 12:45 pm
Course designation: EE 2350 - 002
CRN: 22104

What is this course about? EE 2350 is an introduction to circuit analysis. While you may have learned some circuits in EE 1305, this course focuses on building the knowledge and skills needed to know how circuits with DC sources (battery, power adapter) and AC sources (power plants, factories, transmission lines) operate. We will use math and circuit theory to develop a robust set of skills that will allow you to tackle any basic circuit and know how it works.

What can I expect? It is assumed that students in this class do not have a great deal of practice with circuits or circuit theory, other than an introductory course. EE 2350 students are expected to take a very active role in their learning by completing readings and homework before class, coming to class ready to participate with peers and with the professor, and reviewing routinely for assignments and exams. In this course, we have evidence that every student can achieve if they are motivated to be an active learner!

Instructor Information

Jesus J. Gutierrez, Ph.D.
Assistant Professor of Instruction
Office: ENGR A-338
Office Hours: TR 2:00 pm –4:00 pm
F 10:30 am –12:30 pm or by appointment
E-mail: jjgutierrez4@utep.edu

Course Materials

- Subscription to McGraw-Hill Connect Platform (see Blackboard for details)
- Textbook (Main):
  Fundamentals of Electric Circuits, 7th Edition
  Charles Alexander & Matthew Sadiku
  ISBN: 978-1-26-022640-9

Do not feel intimidated if you’ve never been to a professor’s office hours. We are here to help you! You can come alone or with a friend. You can talk about the course, advice for future courses to take, and how things are going outside school. I have an open-door policy, so if I’m in my office you can come in at any time!
FREE PDF Textbook (Optional):

Circuit Analysis and Design
Ulaby, Maharbiz, Furse
Oxford University Press, 2018
Link URL: https://cad.eecs.umich.edu/

What should you bring to class everyday:
- Pen/pencil and paper/notebook for taking notes.
- TI-85 scientific calculator or equivalent
- Laptop with access to the internet.
- Access to Multisim and/or LTSpice.

Course content will be delivered through Blackboard. Also, important class announcements will be delivered via Blackboard and/or e-mail. Please make sure your UTEP e-mail is working, and you have stable access to the internet.

LTSpice is a free, open-source SPICE simulator software developed by Analog Devices, Inc. that includes a graphical schematic capture interface. To download and install LTSpice, visit: https://www.analog.com/en/design-center/design-tools-and-calculators/ltspice-simulator.html

If you have no computer with access to the internet, from UTEP’s Technology Support Center has borrowing services for laptops and tablets: https://www.utep.edu/technologysupport/TSCenter/TSC_EQ_LaptopsTablets.html

UTEP’s Technology Support center also helps for technological needs beyond your scope of troubleshooting, so make sure you contact them if you encounter technical difficulties.

Corequisites
- PHYS 2421 – Introductory Electromagnetism (may be taken concurrently)
- MATH 2326 – Differential Equations (may be taken concurrently)

Prerequisites
By Course (with grade of “C” or better):
- EE 1305 – Introduction to Electrical Engineering
- MATH 1312 – Calculus II

Course Outline

Topics covered in this course include:

1. Circuit Analysis techniques under DC conditions.
3. Analysis of circuits containing inductors, capacitors, and resistors under DC conditions
4. Sinusoidal steady-state analysis using phasor techniques
5. Steady-state power calculations, transformers, and mutual inductance.
How can I succeed in the course?

This course may be difficult to you, especially if you are a first-year student who received A’s and B’s in high school for memorizing course material. However, this course is not about memorizing equations or theory. It’s about applying equations and deriving them. You may be wondering; how do I achieve this? The answer in my experience is… practice, practice, practice! If you practice enough, you will be able to recognize patterns and become familiarized with the process needed to derive equations, which will give you a deeper understanding about circuits and their usefulness and presence in our everyday lives.

Relationship to (ABET) Program Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics:
  Students use mathematical and engineering concepts in the analysis and design of complex electrical circuits.
- An ability to apply engineering design to produce solutions that meet specified needs:
  Students use their newly acquired skills to design circuits that meet specified behaviors.

Rules and Policies

How is your grade determined?

Your achievement on the course objectives will be assessed using a combination of in-class work, homework, participation, and exams. All student grades are protected by the Privacy Act of 1974. Your course grade will be determined by your weighted performance in the following categories:

1. Homework …………………….. 20%  
   90% – 100% → A
2. Weekly In-class Assignments…10%  
   80% – 89% → B
3. Reading Assignments……………10%  
   70% – 79% → C
4. Midterm Exam (2)……………….30%  
   60% – 69% → D
5. Final Exam ……………………..20%  
   0% – 59% → F
6. Class Participation……………..10%

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Not all students do as well as they think they will when they walk into class on the first day. Why is this? My experience tells me that:

1) Some students do not have the active learning and studying skills that they should already have at college level (it takes one or two exams to recognize this). We can fix this together.
2) Some students do now actually put the effort that is necessary (even though they think they are putting in a big effort). You can fix this if you are honest with yourself.

For some students, there may be a “gray area” between two-letter grades in the final distribution, so two people getting the same weighted average grade could get different letter grades. If you are in one of these gray areas, whether you get a higher or lower grade depends primarily on two factors: (a) class participation and (b) whether your performance has been improving or declining over time.

What are Reading Assignments?

It is essential that you take time outside of class to do your reading assignments so that you come prepared for class. Taking notes while doing your reading assignment will help you not only to
How can you prepare for exams? The best way to ensure that you will succeed is showing up to class, taking notes, doing all homework, and reading assignments with plenty of time to make mistakes and ask questions. Also, do not forget the importance of sleep before an exam!
How can you participate in class if you’re shy? Although I do my best to ensure a safe space for learning for everyone to participate, there may be some students that are quiet learners. If you are a quiet learner, you can participate with honest and serious participation through student response systems, collaborating your small group during assignments, engage with me (the professor) during office hours or by e-mail, or even helping fellow students by explaining concepts inside and outside of class. There are many other ways you can participate even if you don’t want to participate in front of the whole class.

What will I achieve after taking this course? Course Goals

1) This course should prepare you to succeed in future Electrical Engineering courses. You will learn how to be an active learner in the lecture hall and how to actively study. Research has shown that students who do readings/assignments before class, actively participate in class, and review notes regularly can and will succeed in this and future courses. This course is designed to equalize your readiness for class, and your effort will pay off as you practice connecting the topics together and gaining confidence in your ability!

2) This course will help you in learning how to learn. How do you know you are learning? When you make mistakes, you identify what you don’t know. Making mistakes is key to
learning. Recognizing gaps and asking questions is key to learning. It is best to make mistakes in homework and assignments when the stakes are low, so you are successful on the exam.

3) **This course will provide you with the basic concepts and skills that make up the field of electric circuits.** At the end of the semester, you will:
   - Analyze resistive circuits under DC conditions using network analysis techniques.
   - Determine steady-state behavior of circuits containing inductors and capacitors.
   - Design op-amp circuits to amplify signals based on real-life specifications.
   - Determine impedances to calculate sinusoidal power under steady-state conditions.
   - Calculate power delivery and transfer for balanced three-phase transformers.

4) **This course should excite you about circuits and electrical engineering in general.** Throughout the semester I hope you ask yourself *and me*, why is this relevant to me? Some lessons will be more obvious as they relate to everyday devices and applications. I hope that the content we learn in this semester will cause you to ask *more* questions, and even leave you with more questions than answers! If I get you to read some circuits and electrical engineering material other than the book on your own, share it with me! I will be a happy professor.

| How successful students have done well in this course? | They always read the textbook and pay attention to what they are reading and reflect on what they are unsure about. They complete their homework on time with plenty of time to make mistakes and ask questions. They value taking notes and doing assignments as valuable tools to learn. They attend each class and come prepared. They are brave and vulnerable, meaning that they are willing to make mistakes, take the chance of drawing a circuit or a solution wrong, and attempt to answer the question by themselves before checking in with a peer. They review on their own every question to see if they could teach it to someone else. Successful students don’t just get the right answer and move on, they are able to explain how they arrive at that answer. |

**Course Calendar**

This is a tentative schedule of the course topics, and assignments, subject to change.

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Assignments</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 17,19</td>
<td>1. Intro EE Review</td>
<td>-</td>
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<tr>
<td>2</td>
<td>Jan 24,26</td>
<td>1. Intro EE Review</td>
<td>HW 1 Jan 26</td>
</tr>
<tr>
<td>3</td>
<td>Jan 31, Feb 2</td>
<td>2. Resistive Circuits</td>
<td>HW 2 Feb 2</td>
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<tr>
<td>4</td>
<td>Feb 7,9</td>
<td>2. Resistive Circuits</td>
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<tr>
<td>5</td>
<td>Feb 14, 16</td>
<td>2. Resistive Circuits</td>
<td>HW 3 Feb 16</td>
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<tr>
<td>6</td>
<td>Feb 21, 23</td>
<td>3. Operational Amplifiers</td>
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<tr>
<td>7</td>
<td>Feb 28, Mar 2</td>
<td>3. Operational Amplifiers</td>
<td>HW 4 Mar 2</td>
</tr>
<tr>
<td>8</td>
<td>Mar 7, 9</td>
<td>3. Operational Amplifiers</td>
<td>Exam 1 Mar 9</td>
</tr>
<tr>
<td>9</td>
<td>Mar 14, 16</td>
<td>SPRING BREAK (NO CLASSES)</td>
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<tr>
<td>10</td>
<td>Mar 21, 23</td>
<td>4. Inductance &amp; Capacitance</td>
<td>HW 5 Mar 23</td>
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**Academic Dishonesty Statement**

As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student’s work is a fair representation of the student’s ability to perform is the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Any case involving academic dishonesty will be referred to the Office of the Dean of Students. The Dean will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the Office of the Dean of Students’ homepage (Office of Student Life) at http://studentaffairs.utep.edu/dos for more information.

You can also refer to the IEEE website for information on our code of ethics: http://www.ieee.org/about/corporate/governance/p7-8.html

**American Disabilities Act (ADA) Statement**

The University is committed to providing services, equipment, and accommodations to individuals with documented disabilities to provide them with equal opportunities to participate in programs, services, and activities in compliance with Sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990, and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, by email to cass@utep.edu, or visit in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.
Discrimination Statement

I do not discriminate, nor will I allow discrimination, on the basis of race, color, national origin, sex, religion, age, disability, genetic information, veteran’s status, sexual orientation, or gender identity. Members of the UTEP community are protected from discrimination and harassment by the State and Federal Laws.

University Resources

Technology Resources

• UTEP Technology Support: Students experiencing technological issues or challenges (e-mail, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. [Website: www.utep.edu/technologysupport]

• UTEP Engineering Technology Center (ETC): Provides laptop and computer repair services for engineering students, as well as service requests for software. [Website: www.utep.edu/engineering/etc/]

Academic Resources

• UTEP Library: Access to a wide range of resources including online, full-text access to thousands of journals and e-Books, plus reference services and librarian assistance for enrolled students. [Website: www.utep.edu/library/]

• Math Resource Center for Students (MaRCS): Ask a tutor for help (including remotely) and explore available math resources like formula sheets, tables, and videos. [Website: www.utep.edu/science/math/marcs]

• Advancement Center for Engineering Students (ACES): Students serving other students. Hybrid tutors provide tutoring for a wide range of topics including engineering, math and science, and also manages room reservations. [Website: www.utep.edu/engineering/student-resources/student-resources-aces.html]

Individual/Well-Being Services

• YWCA Early Learning Academy: Conveniently located on campus to serve the UTEP community, YWCA’s Early Learning Academy is the best childcare solution for UTEP students, faculty, and staff. [Website: https://www.utep.edu/student-affairs/early-learning-academy/]

• Military Student Success Center: Assists personnel in any branch of service to reach their educational goals. [Website: www.utep.edu/student-affairs/mssc/]

• Center for Accommodations and Support Services (CASS): Assists students with ADA-related accommodations, for coursework, housing, and internships. [Website: www.utep.edu/student-affairs/cass]

• Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions, as well as career and disability assessments. [Website: www.utep.edu/student-affairs/counsel]