

EE 2350: ELECTRIC CIRCUITS I

Fall 2015 Course Syllabus

ONE OF THE MOST IMPORTANT COURSES YOU WILL TAKE

Electrical technology permeates most all aspects of life these days. Electrical engineers must master the analysis and design of electric circuits. This course will provide a foundation for you to understand such things as amplification, attenuation, feedback, control, stability, oscillation, power, information, and microelectronics. Things you learn in this course will appear in all subsequent courses you will take as an EE major at UTEP.

INSTRUCTOR

Scott Starks, Ph.D., P.E.
Room E230 B (Between the Engineering and Class Room Buildings.)
sstarks@utep.edu (915) 747-8856
Office Hours: TBA

COURSE LOCATION

Room 207, Liberal Arts Building

COURSE TIME

4:30 – 5:50 Tuesdays and Thursdays

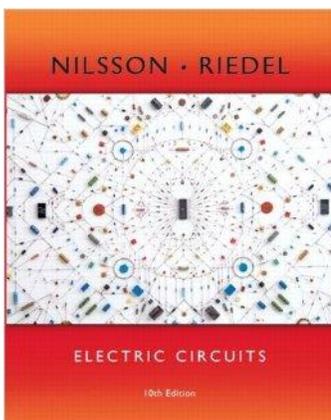
COURSE DESCRIPTION

Theory of electric circuits including Kirchhoff's laws, resistive circuits, techniques of circuit analysis, inductance, capacitance, sinusoidal steady-state analysis, sinusoidal power calculations, and balanced three-phase circuits.

PREREQUISITES

EE 1305, MATH 1312, PHYS 2421+ and MATH 2326+, each with a grade of C or better. (PHYS 2421+ and MATH 2326+ may be taken concurrently.)

Students not satisfying the prerequisites will be dropped from the course.



Electric Circuits, 10th Edition

TEXTBOOK

Electric Circuits, 10th Edition

Nilsson and Riedel, Pearson Publishers

You may acquire either the online or hardcopy editions.

You are required to purchase the Mastering Engineering package.

EXAMS

In all, you will have three exams in the course. Each exam will count as 25% of your grade in the course. Two exams will be given during the regular term. These exams will be announced in class and scheduled at least one week in advance. The Final Exam will be given on Tuesday, December 8 at 4:00 – 6:45 PM.

HOMEWORK (MASTERING ENGINEERING)

Homework is an essential part of the course. You will be assigned Homework for virtually every class period.

Homework will be submitted and graded using **Mastering Engineering**. **Mastering Engineering** is an online system that is supported by Pearson, the publisher of your textbook. You will be required to register for **Mastering Engineering**. For this you will need several things.

1. **Course ID:** This will be provided by the instructor.
2. **Pearson account:** You will either create your Pearson student account or identify your existing account.
3. **Access code or buy access:** Either enter a student access code or buy access using a credit card or PayPal. A student access code card may be provided with your new textbook or you may be able to purchase this separately.

Results of a survey of 4,500 students using Mastering Engineering

88% understood the material better.

84% felt better prepared for exams.

85% recommended that their instructor continue to use Mastering Engineering.

Mastering Engineering provides tutorial homework problems designed to emulate the instructor's office hour environment. The system can guide you through engineering concepts with self-paced individualized coaching. It will provide you with feedback that is specific to any errors you may happen to make. Also you may elect to receive optional hints that are capable of breaking a complex problem down into simpler steps.

QUIZZES (LEARNING CATALYTICS)

You will be given Quizzes at various times during the semester. Quizzes will not necessarily be announced in advance. Quizzes are important because they provide the instructor with an indication of your status with regard to understanding the topics.

You are required to bring a mobile device with you to every class. Tablets, laptops, smart phones, etc. are all acceptable.

Quizzes will be administered in class using a tool provided by the publisher of your textbook called **Learning Catalytics**, which is a "bring your own device" engagement system. **Learning Catalytics** is designed to provide instantaneous feedback to the instructor. It allows the instructor to measure your learning during class and adjust lectures accordingly.

Homework Matters

The grading system places significant emphasis on successfully completing homework assignments. Working homework problems prepares you for exams and quizzes!

GRADING

Your grade in the course will depend on a weighted average of exams, homework and quizzes. The weights are shown in the table below.

Exam 1	25%
Exam 2	25%
Final Exam	25%
Homework	15%
Quizzes	10%

You final letter grade will be assigned according to the following scale.

90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
< 60	F

Calculator Policy

Students are required to bring a scientific calculator to class daily. Programmable calculators that allow for the storage of formulas and solutions to problems will NOT be allowed.

Calculators that meet the guidelines set forth by the National Council for Engineering and Engineering Surveyors (NCEES) will be allowed for quizzes and exams. More information is provided at their website:

<http://ncees.org/exams/calculator-policy/>

If you have any questions, just ask the instructor!

Learning is a reinforcement process.

Follow these steps throughout the term to achieve mastery of the topics of this course.

Before class: Prepare for lecture by reviewing notes, reading the text, attempting a few problems, formulating some questions.

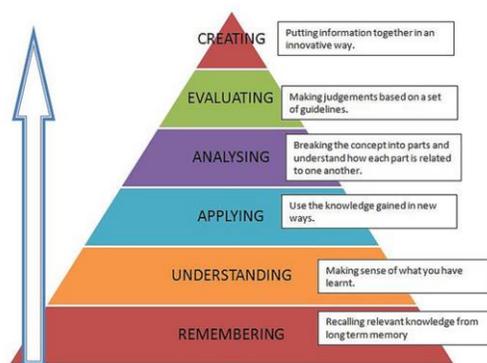
During class: Attend lecture, concentrate intently, take detailed notes, and ask questions.

After class (before the next class): Review and annotate notes, reread the text, work assigned problems, work extra problems, and meet with a study partner or study group to go over material and problems.

In preparation for a test or an exam: Review notes, review text, rework problems, and meet with a study partner or study group to go over material and problems.

An Important Difference between High School and College

Bloom's Taxonomy identifies six levels of intellectual skills. At the lowest level is the simple recall or recognition of facts. At the highest level is creativity. In between are increasingly more complex and abstract mental levels.



In high school you primarily worked at the first two levels of demonstrating subject mastery – remembering and understanding.

In EE 2350, the expectations are higher. From the start, you will be expected to think at levels 3 and 4 – applying and analyzing. This entails mastering concepts and applying them to solve new problems.

Approaching learning as a reinforcement process in this course will assist you in transitioning from the “high school” way of studying to that of a successful electrical engineering major in “college.”

CHAPTER OUTLINE

- Circuit Variables
- Circuit Elements
- Simple Resistive Circuits
- Techniques of Circuit Analysis
- Inductance, Capacitance, and Mutual Inductance
- Sinusoidal Steady-State Analysis
- Sinusoidal Steady-State Power Calculations
- Balanced Three-Phase Circuits

LEARNING OBJECTIVES AND ASSESSMENT PROBLEMS

Each chapter begins with a set of learning objectives. At key points in the chapter, you are asked to stop and assess your mastery of a particular learning objective by solving one or more assessment problems. The answers to all of the assessment problems are given at the conclusion of each problem, so you can easily check your progress toward mastering the learning objectives. If you are able to solve the assessment problems for a given objective, you have mastered that objective. Take a bow! If you need additional practice, several end-of-chapter problems that relate to the learning objective are suggested at the conclusion of the assessment problems.

PROCRASTINATION

MOST STUDENTS MAKE THE MISTAKE OF STUDYING FROM TEST TO TEST RATHER THAN FROM CLASS TO CLASS. IN DOING SO, THEY FALL VICTIM TO A STUDENT'S GREATEST ENEMY – PROCRASTINATION.

YOU WILL HAVE HOMEWORK DUE PRIOR TO MOST EVERY CLASS DURING THE TERM. THIS SHOULD HELP DISCOURAGE PROCRASTINATION.

LECTURES AND CLASS ATTENDANCE

Students are expected to attend all classes. The course will be taught with daily student-to-student interaction and instructor feedback. The course material will be linked to the text, however it is still important for students to attend class sessions.

“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 of any work or materials that are attributable in whole or in part to another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.”

UTEP UNDERGRADUATE CATALOG

ACADEMIC DISHONESTY

Proven violations of the detailed regulations, as printed in the *Handbook of Operating Procedures*, and available in the Office of the Dean of Students and the homepage of the Dean of Students at www.utep.edu, may result in sanctions ranging from disciplinary probation, to a failing grade in the work in question, to a failing grade in the course, to suspension or dismissal, among others.

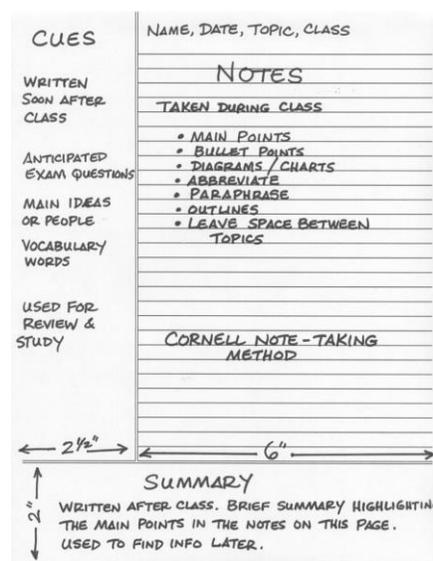
ACCOMMODATION UNDER THE ADA

If you feel you may have a disability that requires accommodation, contact the Disabled Student Services Office at 747-5148, go to room 106E Union, or e-mail dss@utep.edu.

Cornell Note Taking

Whether you take notes manually or type them into a computer, it's important to lay out each page in a way that best facilitates your learning process. It is recommended that you format each page to allow for three content areas:

1. Your actual note taking.
2. Questions that your notes answer.
3. A summary of the content on each page of notes.



The Cornell Note-Taking Method provides an excellent template with three structured areas – a place for your actual Notes, a place for questions (Cues), and a place for a Summary. Take your notes as you would normally, but leave the Cue and Summary sections blank. After class, you can fill in the Cue and Summary sections between class periods.

You can learn more about the Cornell Method at : <http://reviews.shopwritersbloc.com/general/what-is-the-cornell-note-taking-system.html>

Etiquette

Throughout this course, you will be expected to behave in a professional manner.

Students should arrive to class and be ready to learn at the start of each period. If you arrive late, please enter the room as quietly as possible and take the first empty seat you encounter.

Students should not receive or make cell phone calls or texts message during class. At times, students can become engaged in extraordinary circumstances (such as a life-threatening event.) Please let the instructor know in advance to arrange accommodation.

The instructor makes the point of asking for questions prior to the end of each lecture. Ask questions then rather than rushing the podium after class is dismissed with the intent of asking questions.

Remember this class ends after the instructor's usual dinner hour. He is most likely hungry and anxious to grab dinner!

A FATAL TRAP

You can easily fall into is a false sense of security because the instructor presents the material so clearly that you feel you understand it completely and therefore do not need to study or review it before the succeeding class. You have to remember, the instructor is old enough to be eligible for Social Security. He has been studying electric circuits since before your parents were born!

When you attend a lecture that is presented clearly, it only proves that the INSTRUCTOR understands the material.

What is necessary is for YOU to understand it. For you to be able to given the lecture. In fact, that should be YOUR goal in every class – to get to the point where YOU could give the lecture.

HOW TO SUCCEED IN THE COURSE

- Treat learning as a reinforcement process. Master the material presented in each class before the next class comes. Make this a resolution beginning with the first period of the semester!
- Don't get behind. Establish a routine to follow between successive lectures (reviewing notes, working problems, reading ahead in the text, etc.) Devote adequate time to fulfill your routine.
- Do your homework! The Mastering Engineering system is designed to help you in this regard. It provides online tutorials, how-to videos, and other assistance.
- Work extra problems at the end of the chapter to hone your skills and reinforce learning.
- Use a systematic system for note-taking, such as the Cornell method. Use this system to help discover important aspects of each topic covered in the course.
- Prepare at least one (preferably 3 questions prior to each class periods.) Write them in your notes and be prepared to share them in class.
- Work from class to class and never from test to test! Learning electric circuits is a sequential process. It involves lots of little steps. You have to master each one.
- Learn the names of every student in the class. Develop friendships with other students in the class. Become study partners. Start a study group.

A New Approach in Learning Electric Circuits

The faculty of the Department of Electrical and Computer Engineering decided that a new approach was needed in the learning of Electric Circuits. Previously the Chapters of the text were covered in sequential order. This approach resulted in the mixture of “steady-state” and “transient” circuit analysis during the semester devoted to Electric Circuits I. Such an approach required students to apply techniques normally present in Differential Equations oftentimes before they had been covered in Differential Equations classes. Many students found this approach confusing. Their understanding of the “transient” behavior of circuits also suffered.

The new approach was recently instituted. In it, the topics included in Electric Circuits I was modified to include only those elements that pertain to “steady-state” behavior of circuits. The mathematics needed to perform “steady-state” analysis is not quite as advanced. Such an approach relies more on topics from Mathematics such as Algebra, Trigonometry, Complex Numbers, Vectors, and Calculus. Also, the new approach in Electric Circuits I gives students an earlier introduction to the behavior of Alternating Circuits.

Chapter Outline

Chapter 1: Circuit Variables

Chapter 2: Circuit Elements

Chapter 3: Simple Resistive Circuits

Chapter 4: Techniques of Circuit Analysis

Chapter 6: Inductance, Capacitance, and Mutual Induction

Chapter 9: Sinusoidal Steady-State Analysis

Chapter 10: Sinusoidal Steady-State Power Calculations

Chapter 11: Balanced Three-Phase Circuits