University of Texas at El Paso

EE 2351 – Circuits II

Summer II 2017

Course Information

Course Websites:	http://emlab.utep.edu/ee2351cktii.htm http://masteringengineering.com
Meeting day and time:	MTWRF, 2:40pm – 4:50pm
Room:	UGLC 336
Final Exam:	TBD
Course designation:	EE 2351
CRN:	36123
Credit hours:	3
Lecture hours:	3

Course Description: Analysis of transient behavior in first-order and second-order circuits. Circuit Analysis using the Laplace transform. Network functions and frequency response representation of circuits. Steady-state analysis of circuits fed by non-sinusoidal periodic signals using Fourier series. Two-port networks. Computer-aided analysis of circuits.

Corequisite: EE2151. Lab for EE 2351.

Instructor Information

Jesus J. Gutierrez, Ph.D. Student

Office:	ENGR E-315
Office Hours:	M-F 1:00 pm – 2:00 pm
E-mail:	jjgutierrez4@utep.edu

Course Materials

The following items are required for this course:

- **Textbook:** Electric Circuits (10th Ed.)
  J.W. Nilsson and S.A. Riedel
  Prentice Hall, 2014
  ISBN 9780133760033
- Access to Mastering Engineering Website
  Course ID: **MEGUTIERREZ95791**

Students should maintain a well-organized notebook that archives their syllabus, lecture notes, homework solutions, and quizzes.

Prerequisites

By Course (with grade of "C" or better):

- EE 2350 – Circuits I
- PHYS 2421 – Introductory Electromagnetism
- MATH 2326 – Differential Equations

By Topic:

- Fundamental laws of electricity
- Techniques of circuit analysis (Node-Voltage, Mesh-Current)
- Resistive Circuits, RL and RC Circuits, RLC Circuits
- Differential Equations
- Phasors

Course Outline

Topics covered in this course include:

1. Responses of First-Order RL and RC Circuits: Natural and Step Responses
2. Responses of Second-Order RLC Circuits: Natural and Step Responses
3. General Solution for Step and Natural Responses for RL/RC/RLC Circuits
4. Sequential Switching for RL/RC/RLC Circuits
5. Review of Laplace Transforms. Inverse Laplace Transforms using Partial Fraction Expansion
6. Circuit Representations in the s-domain. Analysis of circuits in the s-domain.
7. Transfer Functions in circuit analysis. Relation to the sinusoidal steady-state response and frequency response. Frequency Response Plots.
8. Frequency Selective Circuits: Passive Circuits.
9. Two-Port Networks: I/O representation using admittance, impedance, and transmission parameters.

Course Outcomes

By the end of the semester, the student will demonstrate the ability to:

- Apply circuit analysis techniques to analyze first order and second order circuits in the time domain. (C)
- Understand the concepts of natural and forced response, zero-input, zero-initial conditions in the analysis of electric circuits. (I)
- Apply Laplace transform techniques to represent circuits in the frequency domain, analyze using systematic methods (node, mesh, Thévenin and Norton terminal equivalencies, and circuit theorems) (C)
- Understand the concept of resonance and apply circuit analysis techniques to series and parallel RLC circuits. (I)
- Understand and determine using circuit analysis techniques representations of two-port circuits (I)

- Apply software tools to the analysis of electric circuits in the frequency and time domain (C)

Contribution to Professional Component

EE2351 is a Sophomore level core course that builds on topics covered primarily in Sophomore required courses.

Relationship to (ABET) Program Outcomes

- Ability to apply knowledge of mathematics, science, and engineering:
  Students use mathematical concepts in the analysis of electric circuits.
- Ability to identify, formulate, and solve engineering problems:
  Students solve problems and observe simulations of different types of circuits.
- Ability to communicate effectively:
  Students solve problems and discuss circuits issues in class.
- Ability to use computers to enhance problem solving:
  Students observe simulations to solve problems and visualize solutions involving circuits

Rules and Policies

Grading

Student achievement in the course objectives will be assessed using a combination of homework and four (4) exams.
Student grades are protected by the Privacy Act of 1974.
Your course grade will be determined by your weighted performance in the following categories:

Homework ……..……....20%
Exams (4) ……..…….80%

$90\% - 100\% \rightarrow \mathbf{A}$
$80\% - 89\% \rightarrow \mathbf{B}$
$70\% - 79\% \rightarrow \mathbf{C}$
$60\% - 69\% \rightarrow \mathbf{D}$
$0\% - 59\% \rightarrow \mathbf{F}$

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.

Homework Policy

- Homework is an integral part of the course. It is crucial that you promptly and effectively do all your homework, as it will be very useful for your learning and preparing for the tests. You will be assigned homework through the Mastering Engineering website, where it will be submitted and graded.

- Mastering Engineering is an online system that is supported by Pearson, the publisher of the textbook. You will be required to register for Mastering Engineering. For this you need the following things:
    1. Course ID: **MEGUTIERREZ95791**
    2. Pearson Account: You will either create your Pearson student account, or identify your existing account.
    3. Access code or buy access: Either enter your student access code for the book, or buy access using a credit card or PayPal. A student access code card may be provided with your new textbook or be purchased separately.
- Mastering Engineering provides tutorial homework problems designed to emulate the instructor's office hours environment. The system can guide you through engineering concepts with self-paced individualized coaching. It will provide you specific feedback to any errors you make happen to make. Also you may elect to receive optional hints that are capable of breaking a complex problem down into simpler steps.
- Should any questions arise with the website, you will NOT e-mail me regarding technical issues. The Student Technical Support Protocol is as follows:

    1. Search for answers to your support questions here:
        - https://support.pearson.com/getsupport/s/
    2. If you cannot find the question in the FAQ, visit this site to contact Tech Support:
        - https://support.pearson.com/getsupport/s/contactsupport
    3. If Tech Support does not resolve your issue, you may contact our dedicated Pearson rep:
        - Shauntel Campos Grubbs: Shauntel.campos@pearson.com
        - You MUST provide your Technical Support Ticket number in this e-mail.
- Your homework must be your own work. Students suspected of cheating or copying homework will be submitted to the Office of Student Conduct and Conflict Resolution and will remain part of your permanent record at UTEP.

~ Missed Homework ~

- There will be a due-date for each homework assignment. If for some reason you cannot finish the homework on the due-date, you can complete it later, but the grade will be reduced proportionately to the days passed after the due date.
- You have a set number of attempts for each problem/question. It is strongly encouraged that each problem/question is done until you get the highest grade.
- The homework problems will still be available after the due-date has passed and your grade submitted. This is for practicing the problems in preparation for the exams.

Exam Policy

- There will be 4 exams, each one accounting for 20% of the final grade.
- Duration of the exam will be one (1) hour and twenty (20) minutes of the class.

- Full work must be shown for full credit. Work must be neat and well organized.
- The final answer must be boxed and given proper units.
- Students suspected of cheating will be submitted to the Office of Student Conduct and Conflict Resolution and will remain part of your permanent record at UTEP.
- The tentative schedule for the exams and the covered topics is shown in the chart below. This may be subject to change:

Date	Exam & Chapters
Monday, July 17	Exam #1
Monday, July 24	Exam #2
Monday, July 31	Exam #3
TBD	Exam #4

~ Missed Exams ~
A missed exam can be made-up IF AND ONLY IF:
(1) the reason for missing the exam is beyond the student's control, e.g. such as a medical excuse, jury duty, death in the family or automobile accident, or
(2) prior consent is obtained from the instructor for missing the exam based on a non-frivolous reason, e.g. such as a job interview, conference, or out-of-town job related travel. In either case, the student must submit a written and signed statement describing the reasons for missing the exam, with appropriate documentation, and petition for a makeup exam. Medical excuses require a note from the doctor. **A missed exam will carry zero grade if these conditions are not met.**

Attendance Policy

Students are required to attend class and to show up to lectures on time. The course instructor reserves the right to turn away late comers and to withdraw students from the course that are repeatedly absent. Students missing more than two lectures should seriously reflect on their commitment to this course, as missing classes is highly correlated with poor performance. Students absent from lecture are still held responsible for all information discussed, homework assigned, and exams administered during that missed lecture.

Etiquette

The following items are expected from you as part of being a student in the class:
• Ask questions! Despite how "silly" or "dumb" you may think your question is, it is very likely that other students have the same question. Confusion on even small details in course material can cause bigger problems and hold you back. If you are truly embarrassed by your question, send an anonymous e-mail to the course instructor. I promise I will respond!
• Respond honestly to polls and provide real-time feedback to instructor about the course. This will contribute greatly to the quality of the course and to your success in it.
• Visit the course instructor during office hours, or by appointment, if needed.
• Treat e-mail correspondence as a professional exchange of information.
• Turn off cell phones, pagers, or anything else that may distract the class.

- Purchase the text book with the correct edition.
- Read the assigned sections of the book.
- Bring all of your course materials (text book, notebook, pens/pencils, paper, calculator, and ruler) to every class.
- Show proper etiquette during class. Do not talk, make excessive noise, or otherwise distract the class. You will be asked to leave and it will affect your grade.

Academic Dishonesty

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

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, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass .

Discrimination

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.