University of Texas at El Paso
Electrical and Computer Engineering
Circuits 1
EE2350 – 002 CRN , Spring 2018

INSTRUCTOR:	Virgilio Gonzalez
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OFFICE HOURS:	MW: 1:00 PM– 2:00 PM, or by appointment
PREREQUSITES and CO-REQUISITES	EE 1305 and PHYS 2421 and MATH 1312 and MATH 2326 Minimum Grade of C. . Can be taken concurrently with PHYS 2421 and MATH 2326
CATALOG DESCRIPTION:	Introduction to systematic methodologies for the analysis of electric circuits in DC and AC steady state. Use of simulation tools for steady state circuit analysis.
TEXTS:	REQUIRED: Nilsson , Riedel, Electric Circuits (w/Mastering Engineering Access Code) Edition: 10th, Pearson *Mastering Engineering (ME) Online access is mandatory for every student because assignments and grades are taken from the system. Bundle available in UTEP Bookstore. There are options to just buy the access code to ME, or to rent the book, or an ebook.* *Additional instructions to register are added in Blackboard, at the end of the syllabus, and in the link. https://youtu.be/J5o44FZ60tM* OPTIONAL: Suggested Zybook in circuits, another simple eBook to facilitate learning and practice basic concepts: 1. Sign in or create an account at learn.zybooks.com 2. Enter zyBook code **UTEPEE2350GonzalezSpring2018** 3. Subscribe
REQUIRED ADDITIONAL MATERIAL	• Kit "Analog Discovery" from Digilent used in EE1305: https://store.digilentinc.com/analog-discovery-2-100msps-usb-oscilloscope-logic-analyzer-and-variable-power-supply/ • Project Breadboard, jumper wires and other tools used in EE1105.
TEACHING ASSISTANTS	-Name: Pavithra Pochamreddy -TA Office: Engineering E324 (SenSAL lab) -TA Office Hours: Thursday 3 PM to 5 PM. For other times, by email appointment only. While communicating in email, use only your UTEP email ID and include the email subject line "EE2350 Circuits (M, W)". -TA e-mail: ppochamredd@miners.utep.edu

Course Outcomes

1. Understand the terminology used in conjunction with electric circuits and the terminal characteristics of ideal circuit elements. (I)
2. Mathematically model electric systems using ideal resistive, inductive, and capacitive elements. (I)

3. Apply phasors and impedance transformations to the analysis of electric circuits fed by a sinusoidal input in steady state. (C)
4. Apply various systematic methods (node, mesh, terminal equivalency, and circuit theorems) to electric circuit analysis in steady state. (C)
5. Apply various circuit analysis techniques to study circuits that include ideal transformer and operational amplifiers. (C)
6. Apply various circuit analysis techniques to study energy and power in dc and ac circuits. (C)
7. Apply software tools to the analysis of electric circuits in steady state. (C)

Content Material

Item #	Chapter Reading	Topic
1	Chapter 1: Circuit Variables	International System of Units (SI); overview of circuit analysis; voltage and current; ideal basic circuit element; power and energy.
2	Chapter 2: Circuit Elements	Voltage and current sources; electrical resistance (Ohm's law); construction of a circuit model; Kirchhoff's laws; analysis of a circuit containing dependent sources.
3	Chapter 3: Simple Resistive Circuits	Resistors in series; resistors in parallel; voltage-divider and current divider circuits; voltage division and current division; measuring voltage and current; measuring resistance (Wheatstone bridge); delta-to-wye equivalent circuits.
4	Chapter 4: Techniques of Circuit Analysis	Terms for describing circuits; node-voltage method; node-voltage method and dependent sources; node-voltage method special cases; mesh-current method; mesh- current method and dependent sources; mesh-current method special cases; node- voltage method versus the mesh current method; source transformations; Thévenin and Norton equivalents; deriving a Thévenin equivalent; maximum power transfer; superposition.
5	Chapter 5: The Operational Amplifier	The ideal operational amplifier and its inverting and non-inverting configurations; concept of amplification and active circuits; introduction to two-port networks.
6	Chapter 6: Inductance, Capacitance, and Mutual Inductance	Inductor; capacitor; equivalent inductance; equivalent capacitance; mutual inductance.
7	Chapter 9: Sinusoidal Steady-State Analysis	Sinusoidal source; sinusoidal response; phasor; passive circuit elements in the frequency domain; Kirchhoff's laws; series, parallel and delta-to-wye; Thévenin and Norton; node-voltage method; mesh-current method; transformer; ideal transformer; phasor diagrams.
8	Chapter 10: Sinusoidal Steady-State Power Calculations	Instantaneous power; average and reactive power; root-mean-square (rms); complex power; power calculations; maximum power transfer.
9	Chapter 11: Balanced Three-Phase Circuits	Balanced three-phase voltages; three-phase voltage sources; analysis of Wye-Wye and Wye-Delta circuits; power calculations in balanced three-phase circuits, etc
10	Modeling tools*	Simulation and modeling tools, including Multisim, MATLAB and virtual instrumentation.

* Correspond to supplementary material

MANDATORY COURSE POLICIES

- Students are required to use the online system from MPearson Mastering Engineering through a subscription to their website. There will be daily online homework and the grade is based on the timely submission. The subscription link is through Blackboard. The access code can be purchased through the bookstore or directly on the website. It is linked to the Nilsson textbook.
- You will also be required to use the Analog Discovery kit, breadboard and some passive components to build circuits for the course. The work can be done individually or with one partner to share the instrument. However, each student will need to submit individual reports.

GENERAL COURSE POLICIES

- CASS: If a student requires special support please contact the Center for Accommodations and Support services (http://sa.utep.edu/cass/) to help us have a plan and obtain the proper resources.
- An optional eBook at zybook.com is recommended but not required.
- Samples of student work will be collected for quality assurance purposes. Please notify the professor, in writing, if there is any confidentiality requirement.
- Most homework, Special Problems and other assignments will be solved online with **Mastering Engineering**, and BlackBoard.
- A BlackBoard (https://my.utep.edu/myhome.aspx) account is required. It normally is automatically created. If you don't know your account and password, please check with the Help Desk in extension 4357 (or 747-5257 off campus)
- The Professor will be available only during the assigned office hours or by appointment; Email questions are fine but they might not be answered right away.
- All printed work must be stapled, with good presentation. Final results must be emphasized (example red underline or highlighted box)
- Online work must have in the first text line the name of the student, date, Student id# and the team number (when applicable).
- Due dates for Lab assignments, homework and exams will be notified with at least one week in advance.
- Detailed instructions for the **Labs** and other policies will be **provided later** in separate handouts and in **BlackBoard**

GRADING

ITEM	Weight
Final Exam	20%
Mastering Engineering homeworks	20%
Weekly Quizzes (Mastering Eng, Blackboard and paper)	30%
Attendance (iClicker – Reef Polling)	10%
Participation in Tutoring Sessions	5%
Mini-labs	20%
Extra points given by instructor on student behavior	Up to 2%

- Weekly **individual quizzes** might be applied online or in class.
- Each piece of written work must have **name,** student **ID, TEAM** number (if applicable) at the **upper right corner** of the first page; and the **name** in all remaining pages. Incomplete information will reduce the grades.
- No late work will be accepted but special circumstances will be considered if reported on time
- Each element will accumulate points and then will be weighted in each category
- Most elements are individual but there might be team assignments.

- **Show always all the procedure** to arrive to the solutions. End results without the right procedure are considered conceptual errors.
- In exams, each problem has its own weight and will be indicated at the beginning of the problem, points are given by problem section (e.g. sections *a* and *b* of same problem have their own points).
- The grade of an exam answer will be 100% if correct and justified or 0%. To earn partial credit, the student will need to provide an additional paper "Corrections" identifying the reason for the errors, justifying the correct answer and return with the original test back for second grading.
- Labs and special problems have the grades Satisfactory (100%), Attempted (50%) or Unsatisfactory (0%) for the points available. Online quizzes are either "all or nothing" points.
- Letter scale will be **A:** 90%-100%; **B:** 80%-89.9%; **C:** 70%-79.9%; **D:** 60%-69.9%; **F:** below 60% of the reference grade.

Academic Honesty

- UTEP student IDs will be verified in exams and quizzes. You could be denied the exam or quiz.
- Only authorized materials and tools will be permitted during exams and quizzes, these change, please follow instructions.
- Strictly forbidden any communication with any other human being during an exam or quiz.
- It is expected that the students will conduct with integrity in all course areas. Do not attempt to engage in a dishonest activity such as copying, plagiarism, falsifying information, etc. The professor will take measures to prevent such instances and will bring a case to the university authorities.
- Information about University wide policies could be found in the Dean of Students Web page at http://sa.utep.edu/osccr/academic-integrity/

TEAM Policies

- Some assignments will be reported in **teams of 2 or 3 students**. However there is always an individual evaluation for each activity. **Teams could be self-selected.**
- All members ***must contribute*** for each assignment and need to show their own part in the team's report.

Mini Lab Policies

- The course will use take home laboratories using the "Analog Discovery" instrument from Diligent, also use computer simulations using Multisim and MATLAB.
- The lab kit was required in EE1305 and you should be able to use it again. You can share one instrument with another student, but each will need to submit individual reports and indicate who was the partner. You must indicate who will be your partner no later than Monday, or if you will be working alone.
- You will need to build circuits and take measurement on your own time. There will be some tutoring sessions available to learn to use the tools.
- Expect about one lab assignment every two weeks on average.

DISCLAIMER

- Some of the policies could change during the semester for different reasons to improve the student learning. In that case students will be informed accordingly trying to minimize any possible impact..

Student Registration Instructions
MyLab & Modified Mastering with Blackboard

Enter Your Blackboard Course:

1. Sign in to Blackboard and enter your Blackboard course.
2. Do one of the following:
   - Select any Pearson link in the Content area.
   - Select **Tools** in the left navigation and **Pearson's MyLab & Mastering** on the Tools page. Next, select any course link in the top area of the Pearson's MyLab and Mastering Tools page.

Get Access to Your Pearson Course Content:

1. Enter your Pearson account **username** and **password** to **Link Accounts**.
   You have an account if you have ever used a Pearson MyLab & Mastering product, such as MyMathLab, MyITLab, MySpanishLab, MasteringBiology or MasteringPhysics.
   - If you don't have a Pearson account, select **Create** and follow the instructions.
2. Select an access option:
   - Enter the access code that came with your textbook or was purchased separately from the bookstore.
   - Buy access using a credit card or PayPal account.
   - If available, get temporary access by selecting the link near the bottom of the page.
3. From the You're Done page, select **Go to My Courses**.

Note: We recommend you always enter your MyLab & Modified Mastering course through Blackboard.

Get Your Computer Ready

For the best experience, check the system requirements for your product at:
http://www.pearsonmylabandmastering.com/system-requirements/

Need help?

For help with MyLab & Modified Mastering with Blackboard, go to:
http://help.pearsoncmg.com/mylabmastering/bbi/student/en/index.html