

ECE 3301-002
General Electrical Engineering (Non-ECE majors)
Fall 2015

Tuesday & Thursday 12:30 pm – 1:50 pm in ECE 101

Prerequisite: Must have taken and passed Calculus II with a grade of C or higher.

(Just like many other engineering courses, analysis of electrical circuits is not possible without understanding the math behind it. We will be using a lot of calculus in our derivations and you need to be comfortable doing so.)

Instructor information:

Course instructor, contact for help understanding course material and *final grades*.

Name: Dr. Ronald H. Cox
Email: ron.cox@ttu.edu
Office: ECE 233
Office hours: MWF 12:00 PM – 12:50 PM
TR 11:00 AM – 12:20 PM
Other times by appointment

Teaching Assistant information:

Course TA: Contact for questions about *homework/exam grades*.

Name: Robert Grigsby
Email: robert.k.grigsby@ttu.edu

Blackboard/Connect Admin:

Course Administrator: Contact for questions regarding *blackboard or connect*.

Name: Mitchell Kelley
Email: mitchell.kelley@ttu.edu

Course Description: This is the 1st introductory course for linear electric circuits. It covers DC, transient, and AC circuits. The focus is on the understanding and the application of the fundamental laws and equations that govern current, voltage, and power in these circuits.

Course Objectives: This course is designed to give non-EE (ME, IE, CE, ChemE, PetE, and ConE) students a basic understanding of electrical engineering so they can work with and effectively communicate with EEs on engineering projects. Particular emphasis is placed on using basic laws to solve problems involving circuit behavior, including troubleshooting. The basics of analog and digital circuits are covered, and methods of measurements and instrumentation are developed. Examples of practical applications are given for each section. The course ends with a discussion of generators and motors. A key component in this course is that much of the material is identical to questions asked on the electrical engineering topics covered on the Fundamentals of Engineering Exam. A passing grade in this course should prepare the student to pass the EE portion of the FE exam.

Required Material:

- Electrical Engineering (4th or 5th ed.), by Allan Hambley. Fifth edition ISBN 978-0132130066
- Connect Access code.

Additional Reference Material:

- Fundamentals of Electric Circuits (any edition) by Charles K. Alexander and Matthew N. O. Sadiku. ISBN 9781121701847. There is a new custom edition with connect access code included. *This text comes highly recommended as supplementary material by the teaching team!*
- FE Review Manual – Rapid Preparation for the General Fundamentals of Engineering Exam, Michael Lindberg, Professional Publications, Second Edition

Required stationery: Scientific calculator (**Bring and use it in class!** *It helps if you don't have to search for degree and radians during the quiz*) and **orange scantron** for exams.

Course Websites:

Blackboard: www.blackboard.ttu.edu

A multitude of helpful resources are provided on blackboard, such as old exams for practice, old homework for practice, and copies of Dr. Cox's notes (old notes are particularly useful when text does not align with lecture material). Online homework will also be completed via blackboard. It is very important that you check blackboard regularly and utilize these helpful resources!

Announcements:

- Please check Blackboard regularly to be informed of any changes in the tutoring schedules, submission deadlines etc. It is the student's responsibility to stay updated with the Blackboard announcements.
- Students should also check their TTU email on a regular basis. Emails may come from course instructor, Admin TA, or TA. **All** emails should be read and taken seriously.

Student Progress: Exam scores are updated on Blackboard. You can keep track of your progress in the course by visiting the grades section regularly. If you find any discrepancy in the grades uploaded on Blackboard, please notify the course TA at the earliest possible time

Fall 2015 Schedule	
Date	Topic
8/25	Intro. to circuits; Charge, Current, Voltage, Power & Energy
8/27	Ground, Resistance, Ohm's Law, Sensors
9/1	Series/parallel Resistors, Opens & Shorts, Xmas Lights
9/3	Kirchhoff's laws, Current/Voltage Division
9/8	Potentiometer, Wheatstone bridge, Ammeter, voltmeter & ohmmeter
9/10	Nodal Analysis
9/15	Mesh Analysis
9/17	Thevenin/Norton circuits
9/22	Max Power Transfer/ Review - EXAM 1
9/24	Digital & analog circuits , Noise, Base 10 and base 2 nos,
9/29	Optical position encoder, Logic Gates, Ideal Op Amp
10/1	Inverting, non-inverting, summing
10/6	More Op amps & problems
10/8	Capacitor and inductor fundamentals
10/13	DC steady state; intro to 1st order circuits
10/15	1st order RC circuits
10/20	1st Order RL Circuits
10/22	1st Order Circuits Cont. / Review - EXAM 2
10/26	<i>Last Day to Drop</i>
10/27	Sinusoids & Phasors, Complex Numbers & Phasor Math Apps.
10/29	Impedance for series and parallel circuits, Root mean sq
11/3	Resonant Circuits & Voltage Division
11/5	Voltage Div. Cont; History of AC and DC Power
11/10	Transformers & AC Power Distribution
11/12	Complex Power & Power factor correction
11/17	Household Power & Safety / Review - EXAM 3
11/19	Fundamentals of motors and generators, Rotating Machine FE Problems
11/24 - 11/29	<i>Thanksgiving Break</i>
12/1	Review

The instructor reserves the right to make changes to this schedule with prior notice.

Course Guidelines

Homework:

1. Registering and completing homework in sections which do not match the section you are enrolled in at Texas Tech will result in 0's for all assignments done in mismatched section. Example: Registered in Section 001 at Texas Tech, but registered for Section 005 on Connect. This will result in 0's for all assignments completed in section 005, no exceptions will be made.
2. Due dates are set from the first day of classes, however as they follow lecture schedule they are subject to change. It is the responsibility of the student to check connect on a regular basis to make sure due dates are known.
3. There will be no extensions given for homework assignments unless a valid reason is presented. See section XX for a complete list of valid excuses.

Exams:

1. Exam dates are set from the first day of class, and may be found in the course schedule provided on this syllabus.
2. Exams may not be rescheduled except when a valid excuse and documentation is provided. See section XX for a complete list of valid excuses.
3. Any student, who wishes to move the time of their exam, must contact their grading TA a minimum of 1 week prior to the scheduled date of the exam. All requests coming later than 1 week prior will not be considered unless a valid excuse for the late request is provided. See section XX for a complete list of valid excuses.
4. Students needing to take exams in the testing center must also inform their grading TA a minimum of 1 week prior to the scheduled date of the exam.

Email:

All emails regarding ECE 3301 must include the following information in the title of the email:

- a) ECE 3301 – The course title must be in your email title.
- b) Section number – Not the time your class takes place, the section number as designated by the university. This can be found on Raiderlink.
- c) R number – Your R number as designated by the university
- d) Assignment number in question – Homework #, Exam #, or question topic

Example email title: ECE 3301 – Sect. 001 – R##### - Homework 5

Any email received **not containing ALL** of this information in the title will be discarded without being read.

Section XX:

Listed below are all valid excuses for rescheduling exam times or extending the deadline of homework:

1. Death or illness in the family.
2. Personal illness or injury.
3. Job interview; you must make every effort to reschedule the job interview; however we understand sometimes this is not possible.
4. A university sanctioned trip.

Other excuses *may* be considered on an *individual basis*, however the acceptance of excuses outside of those listed above is highly unlikely. **ALL EXCUSES FOR TEST RESCHEDULING MUST BE PRESENTED A MINIMUM OF 1 WEEK PRIOR TO THE SET EXAM OCCURANCE!**
(Exceptions will be made only in the case of unavoidable emergencies)

Expected Learning Outcomes:

1. A basic understanding of DC, Transient, and AC circuit analysis.
2. The ability to communicate with or manage Electrical Engineers.
3. Pass Electrical Engineering problems on the general portion of the FE.

Grading Policy:

Exams, Homework, and Final Exam

- There will be 3 exams and a final exam. Each exam and the final consists of 15 questions. All exams and the final are multiple choice; there is no partial credit.
- The exams are 50 minutes in duration; the final exam is 2.5 hours in duration.
- Each exam and the final has 20 bonus points. This is the curve for the course. (Due to this bonus, being well prepared for the exams and final is key to a good grade.)
- The exams and final exam represent **80%** of the final grade. This will be based on the best 3 scores out of the 3 exams and the final exam. Thus, the final exam will replace your lowest exam grade. There is no penalty for taking the final. If you score poorly, your grade is simply based on the 3 exam grades.
- The remaining **20%** of your grade is based on the online homework. There is no bonus for homework.

Exams Equations and Tools

- The same equations as provided for the FE exam will be supplied during the exams and final. However, since the exams have 15 different questions, one would be wise to have the key equations memorized and well understood.
- There are no restrictions on calculators.
- You must bring an orange scantron sheet and a #2 soft lead pencil.

Final Grades

- Best 3 of 3 exams plus final = 80%
- Homework = 20%
- A = 90 points or better; B = 80 points or better; C = 70 points or better; D = 60 points or better, F if less than 60 points.
- The final grade is non-negotiable; **points will not be rounded up.**
- There will be no makeup exams. If you miss an exam, the final exam will provide that grade.

Keep track of your grade in class throughout the semester and do not wait till the end of the semester to try and improve your grade.

Final exam

- If your 3 exams and the homework add to a passing grade, you are not required to take the final.
- Obviously, the students who have an A have no need to take the final exam. Those who have less than an A may wish to take the final to improve their grade. The final exam is the same number of questions as a regular exam, so it is to your advantage to take the final.
- It goes without saying that those with a grade less than 70 should take the final.

Homework

- Homework will be assigned on the connect website. The homework due dates will be visible once the student logs in to the Connect website.
- Your homework represents 20% of your final grade; no makeup homework or bonus will be applied.
- Connect access is **mandatory**. It can be purchased separately or with the Alexander & Sadiku textbook. Details regarding Connect are available on Blackboard under the folder name "connect".

Attendance: Attendance will not be recorded. However, good attendance is crucial to passing this course. The material is difficult and the pace is rapid.

Academic dishonesty: You need to reason out and show your thought process in every assessment (short quizzes, exams and hands-on activity). Failure to do so will result in points being deducted.

- Cheating will not be tolerated. Any form of cheating in an assessment (based upon the work shown or the observed behavior) will result a zero in that assessment. The student will be notified in case of any suspicion of cheating and will have to show that they know the material in order to prove themselves innocent and get credit for the work.
- Any attempt to change the final answers after the exams/scantrons are returned back in class will result in an immediate grade of 'F' in the course.

OP 34.12: When a faculty member determines according to Part II B 2 of the *Student Handbook* that academic dishonesty has occurred and assigns a grade of **F** for the course, the grade of **F** will stand as a final grade, notwithstanding a subsequent withdrawal from the course by the student. A faculty member shall notify the registrar of the intention to assign a grade of **F** for the course, in addition to the notifications of the department chairperson and the student's academic dean, as provided in Part II B 2 of the *Student Handbook*.

Classroom behavior:

- Texting, reading newspapers, playing games or any other distracting activity is not permitted in class. The student will be asked to leave the classroom in the event of such a behavior.
- Sleeping in class defeats the purpose of attending class. It might be a good idea to wash your face if you are feeling sleepy. Also, solving problems and taking notes is a good way to keep you active in class.
- Students are expected to take good notes that will later help them while revisiting the material covered in class.
- I encourage questions and will be glad to answer any questions you have in the class or during office hours. Feel free to stop me anytime during the lecture if something is not clear to you. Always ask if you are in doubt, don't guess! (*Most often there will be someone else with the same question in mind.*)

Students with disabilities: Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Observance of religious holidays: A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.