ECE 3301 – General Electrical Engineering
Section 008 Wednesday 2:00 – 2:50 P.M.
Fall 2016
Livermore Center 104

Instructor information:
Course instructor: Contact for help understanding course material and *final grades*.
Name: Yao Tang
Email: yao.tang@ttu.edu
Office: ECE 250
Office hours: 3:00 PM – 4:00 PM MWF

Teaching Assistant information:
Course TA: Contact for questions about your *grades*.
Name: Benjamin Simmons
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Online Learning Administrator: Robert Koven, robert.koven@ttu.edu. Contact the Online Learning Administrator for questions regarding ***Blackboard*** and ***Connect***.

Course Description: This is an introductory course to Electrical Engineering for non-majors. Topics include the analysis of electrical circuits, an introduction to electrical instrumentation and electromechanics.

Course learning outcomes: Upon completion of this course, students should be able to do the following:
  1. Analyze linear electric circuits to determine DC response.
  2. Analyze linear electric circuits to determine AC response.
  3. Analyze linear electric circuits to determine basic transient response.
  4. Demonstrate basic knowledge of digital logic circuits.
  5. Demonstrate basic knowledge of electronic instrumentation.
  6. Demonstrate basic knowledge of electric machines.

Assessment of Learning Outcomes: Expected Learning Outcomes will be assessed by exam questions.

Textbook: *Fundamentals of Electric Circuits* by Charles K. Alexander and Matthew N. O. Sadiku. The textbook may be purchased in the following ways:
  1. On-line purchase of an e-book and the ***Connect*** access code.
  2. Bookstore purchase of a paperback custom book and the ***Connect*** access code.
  3. Bookstore purchase of a hardcover book and the ***Connect*** access code.

The ***Connect*** access code is required to complete the on-line homework assignments.

Additional Materials: *Electrical Engineering*, by Allan Hambley. *FE Review Manual –* Rapid Preparation for the General Fundamentals of Engineering Exam, Michael Lindberg, Professional Publications. A scientific calculator is required for exams, and may be useful during lectures.

Course Website: Course information will be posted at
http://www.webpages.ttu.edu/sstorrs.

Follow the appropriate link to this course. Additional information, announcements, online homework assignments and exams scores will be administered through Blackboard at www.blackboard.ttu.edu .

Homework: Online homework assignments will be administered through **Blackboard** using the **Connect** feature of the textbook publisher. **Connect** access is **mandatory**. It can be purchased separately or with the Alexander & Sadiku textbook. Assignments completed using **Connect** must match the Section number at Texas Tech University to be recorded. The due dates are selected to follow the lecture schedule and are subject to change. It is the responsibility of the student to verify all due dates with **Connect** and to complete the online assignments on schedule. There will be no extensions for homework due dates.

Exams: There will be three midterm exams and a final exam. **There will be no makeup exams! Orange Scantron forms and a sharpened #2 pencil are required for each of the exams.** Exam dates **and locations** are scheduled in the course calendar and will not be rescheduled. Students requiring the services of Testing Center, Room 214 in West Hall, must contact the grading TA no less than one week prior to the scheduled exam. Exams 1, 2 and 3 are 50 minutes in duration and will begin as scheduled on the course calendar. The final exam is 2.5 hours in duration and will begin as scheduled on the course calendar. All exams will be closed book and closed notes. An FE Exam Formula Sheet will be provided at the exam. Scientific calculators may be used for the exams.

Email: Questions regarding Homework and exams must be addressed to the TA. 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.

ADA Compliance Statement: 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, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

Personal Emergencies: Valid reasons for rescheduling any event in the course calendar are listed below.
1. Death or serious illness in the immediate family.
2. Personal illness or injury. Please provide medical documentation.
3. Job interview. Please make every effort to schedule job interviews to avoid conflict with the course calendar.
4. A University sanctioned trip. Please provide documentation.

All requests for the rescheduling of exams must be presented to the TA no less than one week prior to the scheduled exam. Exceptions will only be made in the case of unavoidable emergencies.

Final Grades: The number or percentage of A's, B's, etc. is not fixed. The instructor will determine the cutoff points for each grade. If any number of students master this course, they should receive A's. All students having a better-than-average understanding should receive a B. This does not imply there must be A's, B's etc., but most likely a reasonable grade distribution will exist.

Grading:	Homework:	120 points
	3 Tests @ 120 points each:	360 points
	Final Exam:	120 points
	Total:	600 points

The Homework, each exam and the final exam have 20 bonus points. The final grades will be based on 500 total points. (Yes, it is possible to get over 100 %.) There will be no curves applied to any grades. There will be no extra credit.

Academic Integrity: It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity as well as academic excellence. Any attempt by students to present as their own any work that they have not honestly performed is regarded by the faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension. 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*.

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

Civility in the Classroom: Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor; students are prohibited from engaging in any form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class.

Topics:
1. Electrical Circuit Fundamentals – 3 hours
2. Resistive Networks, DC analysis – 8 hours
3. Capacitance and Inductance – 3 hours
4. AC Analysis – 8 hours
5. Transient Analysis – 3 hours
6. Transformers – 1 hours
7. Operational Amplifiers – 3 hours
8. Digital Logic Circuits – 3 hours
9. Topics in electronic instrumentation – 3 hours
10. Introduction to electric machines – 3 hours

ECE 3301 Section 003 Course Calendar		
Date	Mtg	Topics
8/29	1	Introduction to Electrical Circuits, Systems of Units, Charge and Current
8/31	2	Voltage, Power and Energy, Circuit Elements
9/2	3	Ohm's Law, Nodes, Branches and Loops, Kirchhoff's Laws
9/5		**Labor Day Holiday No Class**
9/7	4	Series Resistors, Parallel Resistors, Opens and Shorts
9/9	5	Applications of Kirchhoff's Laws
9/12	6	Voltage Divider Circuit, Current Divider Circuit **Homework 1 Due**
9/14	7	Potentiometers, The Wheatstone Bridge

9/16	8	Electrical Instruments, Ammeter, Voltmeter, Ohmmeter, Oscilloscope
9/19	9	Node Voltage Analysis **Homework 2 Due**
9/21	10	Mesh Current Analysis
9/23	11	Superposition Theorem, Source Transformation
9/26	12	Thevenin Equivalent Circuit, Norton Equivalent Circuit **Homework 3 Due**
9/28	13	Maximum Power Transfer **Wednesday September 28** **Exam 1: 5:30 p.m.** **Media & Communication 281**
9/30	14	Digital & analog circuits, noise
10/3	15	Number Systems: base 10 and base 2 **Homework 4 Due**
10/5	16	Logic Gates
10/7	17	Ideal Op Amp, Inverting Amplifier, Non-inverting Amplifier
10/10	18	Summing Amplifier, Difference Amplifier **Homework 5 Due**
10/12	19	Cascaded Op Amp Circuits
10/14	20	Capacitors**,** Series and Parallel Capacitors
10/17	21	Inductors, Series and Parallel Inductors **Homework 6 Due**
10/19	22	Inductors and Capacitors at DC steady state
10/21	23	Introduction to 1st Order Circuits
10/24	24	1st order RC circuits **Homework 7 Due**
10/25		**Tuesday October 25** **Exam 2: 5:30 p.m.** **Media & Communication 281**
10/26	25	1st order RL circuits
10/28	26	RLC Circuits
10/31	27	Sinusoids and Phasors **Homework 8 Due**

11/2	28	Complex Numbers, Phasor Math
11/4	29	Complex Impedance and Ohms Law, Kirchhoff's Laws and Phasors
11/7	30	AC Nodal Analysis, AC Mesh Analysis **Homework 9 Due**
11/9	31	AC Superposition Theorem, AC Source Transformation, AC Thevenin and Norton Equivalent Circuits
11/11	32	Root Mean Square (RMS) Voltages and Currents, Complex power, Power Factor Correction
11/14	33	Three-phase Power **Homework 10 Due**
11/16	34	AC Power Distribution and safety
11/18	35	Mutual Induction, Ideal Transformers
11/21	36	Series Resonance, Parallel Resonance **Homework 11 Due**
11/23		**Thanksgiving Holiday**
11/25		**Thanksgiving Holiday**
11/28	37	Transfer Functions
11/30	38	Passive Filters **Wednesday November 30** **Exam 3: 5:30 p.m.** **Media & Communication 281**
12/2	39	Fundamentals of motors and generators
12/5	40	Rotating Machines
12/7	41	Course Review **Homework 12 Due** **Last Day of Class**
12/12		**Final Exam Section 008**

The course calendar is subject to change at the discretion of the instructor.