ECE-3302: Fundamentals of Electrical Engineering – Summer I 2019  Section 001
M/T/W/TR/F from 08:00-09:50 A.M. (Room: Indus. Manufac. and Sys. Engr 117)

CONTACT INFORMATION

<table>
<thead>
<tr>
<th>Instructor: Dr. Ayrton Bernussi</th>
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<tr>
<td>E-mail: <a href="mailto:ayrton.bernussi@ttu.edu">ayrton.bernussi@ttu.edu</a></td>
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<td>Phone: 806-834-8583</td>
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<td>Office: Room ECE 239</td>
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<td>Office Hours: M/T/W/TR/F: 10:00 AM – 11:00 AM (or by appointment, and open door)</td>
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COURSE TEXTBOOK

(ISBN13: 9780134814117)

COURSE OBJECTIVES

ECE-3302 prepares the students to perform basic electric circuit analysis. This includes DC, transient and sinusoidal steady-state analysis, and power and energy storage.

COURSE OUTCOMES

By the end of the course students should be able to:

- Apply the concepts of charge, current, voltage, power and energy to solve simple electric circuits
- Analyze electric circuits using Ohm's law and the concepts of mesh, nodes, and branches
- Apply Kirchhoff's current and voltage laws and perform analysis of circuits containing resistors arranged in series or in parallel
- Apply Thevenin's and Norton's theorem to electric circuits
- Analyze electric circuits containing operational amplifiers
- Analyze electric circuits with capacitors, resistors and inductors arranged in series or in parallel
- Analyze the time-response of first-order (RC and RL) circuits.
- Apply the concepts of sinusoids and phasors to circuit elements
- Apply the concepts of impedance and admittance, and combinations, to electric circuits
- Perform sinusoidal steady-state analysis using previously learned circuit techniques
- Apply nodal and mesh analysis and Thevenin’s and Norton’s theorems in the frequency domain
- Perform instantaneous and average power calculation in a circuit
<table>
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<tr>
<th>Date</th>
<th>Description</th>
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| 06/04 | • Course & Syllabus discussion.  
• Charge, Current, Voltage, and Power  
• Circuit Elements  
• Ohm’s Law |
| 06/05 | • Nodes, Branches, and Loops  
• Kirchhoff’s Laws  
• Series Resistors & Voltage Division |
| 06/06 | • Parallel Resistors & Current Division |
| 06/07 | • Nodal Analysis & Mesh Analysis |
| 06/10 | • Nodal Analysis & Mesh Analysis (cont.) |
| 06/11 | • Superposition principle & Source Transformation |
| 06/12 | • Thevenin’s & Norton’s Theorem |
| 06/13 | • Operational Amplifiers |
| 06/14 | EXAM #1 |
| 06/17 | • Exam #1 Solution  
• Capacitors: Series & Parallel  
• Inductors: Series & Parallel |
| 06/18 | • RC & RL Transient Circuits |
| 06/19 | • Singularity Functions  
• Step Response of an RC and an RL Circuit |
| 06/20 | • Step Response of an RC and an RL Circuit (cont.) |
| 06/21 | • AC circuits: sinusoids and phasors |
| 06/24 | • AC circuits: sinusoids and phasors (cont.) |
| 06/25 | • Phasors and Circuit Elements  
• Impedance and Admittance  
• Kirchhoff’s Laws in the Frequency Domain  
• Impedance Combinations |
| 06/26 | • Sinusoidal Steady-State Analysis  
• Nodal & Mesh Analysis |
| 06/27 | • Superposition Theorem & Source Transformation |
| 06/28 | EXAM #2 |
| 07/01 | • Exam #2 Solution  
• Thevenin’s and Norton’s theorems in the frequency domain |
| 07/02 | • AC Power Analysis; Instantaneous and Average Power; Maximum Average Power Transfer; Effective or RMS Value |
| 07/03 | Review  
LAST DAY OF CLASS |
| 07/05 | FINAL EXAM |
NOTE: Topics and/or dates may be changed during the semester at the instructor’s discretion because of scheduling issues, developments in the discipline, or other contingencies.

ASSESSMENT, POLICIES AND PROCEDURES

Assessment:

EXAMS:

In this course there will be three (03) Exams (110 minutes duration for Exams #1 and #2, and 150 minutes duration for the Final Exam). The material for Exam #1 will be announced in class. Exam #2 and Final Exam will be comprehensive. All Exams are closed books, closed notes, and held in class.

ASSESSMENT DETAILS

Homework assignments:

Homework will be assigned in class (expect one homework/each textbook chapter). Due dates will be announced in class (and via Blackboard™). All homework must be uploaded on Blackboard as a single file using a pdf format. It is the responsibility of each student to verify if the uploaded assignment is the correct one and if there are no missing pages.

Late Homework Policy:

Late assignments will receive a MAXIMUM grade of 70. Late solutions will be ONLY accepted up to 24 hours after the due date. After that the grade will be recorded as ZERO.

NOTE: NO late homework will be accepted if the answers have been already posted on Blackboard™.

Exam dates and course grading policies:

<table>
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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework (average)</td>
<td>7%</td>
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<thead>
<tr>
<th>Component</th>
<th>Date</th>
<th>Day of the week</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td>Exams</td>
<td>06-14-2019</td>
<td>Friday</td>
<td>8:00 a.m. to 9:50 a.m.</td>
<td>IMSE-117</td>
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<tr>
<td>Exam #1</td>
<td>06-28-2017</td>
<td>Friday</td>
<td>8:00 a.m. to 9:50 a.m.</td>
<td>IMSE-117</td>
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<tr>
<td>Final Exam</td>
<td>07-05-2019</td>
<td>Friday</td>
<td>8:00 a.m. to 10:30 a.m.</td>
<td>IMSE-117</td>
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The following serves as an approximate grade distribution guide:

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

MISSED EXAM POLICY

MAKE-UP Exams are NOT scheduled for this course. However, if a student missed an exam due to an unforeseen extraordinary circumstance or with prior instructor approval, a make-up exam will be scheduled for the student. On both cases, the student MUST PRESENT a legitimate written DOCUMENTATION.
Blackboard™ Course Website

Homework assignments and due dates, exam dates, and other course related information will be posted on Blackboard™. You will be responsible to check daily the Blackboard™ course website for class announcements and assignment deadlines.

Attendance

Attendance will not be taken. However, you will be responsible for all material covered in class. It is your responsibility to make sure that you are present for all Exams, that all assignments are turned in on time, and that you are aware of all announcements made in class.

Messaging, Filming, Taking Pictures or Recording During Class

Receiving and sending cellular calls and checking/sending e-mail or texting are strictly prohibited during class. The use of any recording devices, filming or taking pictures is not permitted in class.

Relationship of Course to Program Outcomes

This course addresses EE Program Outcomes a, e and k.

Academic Integrity Statement

Academic integrity is taking responsibility for one’s own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [Texas Tech University (“University”) Quality Enhancement Plan, Academic Integrity Task Force, 2010]

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.

Religious Holy Day Statement

"Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. 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. A student who is excused under section 2 may not be
penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

CIVILITY IN THE CLASSROOM STATEMENT

Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university.