Syllabus
for
ENTC 3310
Spring 2021

Instructor: Richard Cox
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Office Hours:

Tuesday/Thursday	10AM – 11:30AM, 2pm – 5pm
Via EMAIL, ZOOM	Contact me

ENTC 3310—Circuit Analysis

Catalog Description:

ENTC 3310: Circuit Analysis (3 credits) Prerequisites ENTC 2310 and MATH 1850. Loop equations and node voltage analysis, principles of phasors and complex numbers applied to alternating electrical circuits, superposition, Thevenin's and Norton's Theorems, solving circuit problems on the computer.

Text Requirement:

Floyd, Principles of Electric Circuits Conventional Current Version (same as 2310), recent edition

Additional Required Materials:

Scientific Calculator: Suggest high end Texas Instruments or Hewlett Packard

MATLAB and Multisim are available for no charge on numerous PCs located in Wilson-Wallis Hall. Octave is a MATLAB lookalike and runs well on Windows PCs. Disclaimer – I have not heard of anyone successfully getting Octave to run under Mac OS. Student licenses are available for Multisim.

Refresher video source for circuit analysis:
http://www.ntspress.com/publications/circuits-second-edition/circuits-2e-faculty-resources/circuits-videos-from-berkeleys-ee-40/

Course Objectives:

Upon completion of the course the student will:
1. have an understanding of electrical circuit theory.
2. be able to solve steady state DC/AC circuits (series, parallel and complex) for unknown currents, voltages and power.
3. be able to apply complex variables theory to the solution of AC circuits
4. be able to write circuit equations for loop analysis and node analysis.
5. be able to apply Thevenen's and Norton's Theorems to solve circuits.
6. be able to model an electrical circuit on the computer.
7. be able to apply Laplace Transforms for transient circuit analysis.
8. be able to apply resistor, inductors, and capacitors to alter performance of semiconductor circuits

ABET Related Outcome:

This course supports ABET Criteria 1, 2, 6, 10

Course Outline: This is a general outline; topics may be added or omitted.

1 Introduction
- Electricity Review
- Complex Number System
- Matrix Math

2 Circuit Laws
- Kirchhoff's Voltage Laws
- Kirchhoff's Current Law

3 Circuit Concepts
- Voltage Divider
- Current Divider

4 Circuit Concepts Applied to Steady State DC Circuits.
- Series Circuits
- Parallel Circuits
- Series-Parallel Circuits

5 Circuit Concepts Applied to Steady State Sinusoidal (AC) Circuits
- Series Circuits
- Parallel Circuits
- Series-Parallel Circuits.

6 Complex Circuit Analysis
- Loop Equations
- Node Voltage Analysis
- Superposition
- Thevenin's and Norton's Theorems

7 Circuit Analysis Using Computer Modeling

8 Differential Equations

9 Laplace Transform Methods for Transient Analysis

10 Fourier Transforms – Step and Impulse response

D2L

D2L will be an integral part of this 100% on-line course. Beyond the typical collecting point for grades, D2L will be used for in-class assessments. These will basically be pop quizzes. This is to encourage you to keep up with the lecture material.

Please check D2L on a regular basis (2-3 times each week) for Announcements, Course Grades, additional assignments, and other information about the course throughout the semester. All communication with me can be submitted through the Digital Drop Box.

Evaluation

Two or three major tests and a Final Exam. All tests and the Final Exam are worth 100 points.

Graded homework assignments. 10 to 15 homework and in-class assignments. 10 points for each homework. Homework is due the next class and will be considered late after two classes from the due date. Late submissions will incur a 25% penalty. In-class assignments are due the day of assignment and cannot be made up.

In-class assessments. 5 points each. Will be given via D2L. Multiple choice, short answer. The purpose of this is to encourage students to keep up with course material in this 100% on-line class.

The grade will be based on attendance, tests, Final Exam and homework assignments. The instructor will add the test and homework grades to get a cumulative grade.

A: above 92% of possible points.
A-: <92% to 90%
B+: <90% to 88%
B: <88%% to 82%
B-: <82% to 80%
C+: <80% to 78%
C: <78% to 72%
C-: <72% to 70%
D+: <70% to 68%
D: <68% to 60%
F: Below 60%

Final is scheduled for Tuesday, May 4, 1:20pm – 3:20pm

Policies:

- If a student cannot take class assignment, test, or exam for any reasons, **an email notice must be given to the instructor in advance**. Instructor will consider the student excuses (such as a physician’s note or a university permission slip) and keep the right to allow the makeups or not. Otherwise, no makeups will be considered.

- All assignment must be submitted on time. The deadline of each submission will be specified by the instructor through discussion during lecture, email, or D2L. It is the student’s responsibility to check emails or D2L for any course updates.

- Students are expected to be punctual and attend all scheduled classes. Poor attendance can affect your final grade.

- Grades are final and non-negotiable. No grades will be dropped.

- Cell phone use during tests is not acceptable and will result in test being taken by instructor at any point during test for grading.

- Students are responsible for following proper student conduct in class as detailed in ETSU’s Policies and Procedures in general and Academic and Classroom Misconduct.