EEL3110L - Circuit Analysis Lab
One Credits, Two and a half hours, Engineering Topic.

Instructor: Dr. Yu Du.

Lab Manual provided by the instructor.

Specific Course Information:
This lab introduces basic test equipment: oscilloscopes, multimeters, power supplies, function generators, etc., and uses this equipment in various experiments on resistors, capacitors, and inductors.

Specific Goals for the Course
a. Specific outcomes of instruction
Upon successful completion of this course, the student will:
1. To gain experience with the circuit board (proto board), resistor coding and tolerances and compare with actual measured values
2. To design and analyze series and parallel connected resistive networks
3. To verify experimentally Kirchhoff's current and voltage laws
4. To design voltage-divider and current-divider circuits
5. To verify experimentally the node-voltage and mesh-current methods in simple resistive networks
6. To verify experimentally Thevenin’s and Norton’s Theorems
7. To verify experimentally conclusions about Op-Amp
8. To verify experimentally conclusions about Filter
9. To measure the time constant of an RC circuit using the oscilloscope
10. To study the correlation between time constants and frequency response of RC circuits
11. To verify experimentally conclusions about Transformer

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
In this course the student will have to show
(a) an ability to apply knowledge of mathematics, science, and engineering (X)
(b) an ability to design and conduct experiments (simulations), as well as to analyze, interpret data (X)
(c) an ability to design a system, component, or process to meet desired needs (X)
(d) an ability to function in multi-disciplinary teams (X)
(e) an ability to identify, formulate, and solve engineering problems (homework) (X)
(f) an understanding of professional and ethical responsibility (N/A)
(g) an ability to communicate effectively (through project reports) (X)
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context (N/A)
(i) a recognition of the need, and an ability to engage in life-long learning (N/A)
(j) a knowledge of contemporary issues (N/A)
(k) an ability to use the techniques, skills, and modern engineering tools necessary for
A knowledge of probability and statistics (N/A)

**Brief list of the topics to be covered**
1. MULTISIM
2. MyDAQ
3. Resistive Circuits
4. KVL, KCL, and Superposition
5. Thevenin and Norton
6. Op-Amp
7. Impedance, Phase Shift, and Introduction to Filter
8. Transient Response of RC circuits, and Introduction to Transformer
9. Revision on Course material

**GRADING:**

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**Conversion of Numerical Grade to Letter Grad**

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