University of Toledo
Electrical Engineering Technology
Master Syllabus

Course Title: Resistive Circuits **Course Code & Number:** EET-1010

Credit Hour Total: 4 **Weekly Contact Hours Lecture:** 3 **Lab Hours:** 2

Prerequisite(s): Trigonometry (MATH-1330)

Text: Floyd, Principles of Electric Circuits, Conventional Current Version, 9th Ed, Prentice Hall, 2010

Laboratory Manual

Software: Multisim 14 (Electronics Workbench)

Course Coordinator: Kamm

A. Course Description

This course constitutes an introduction to electrical components, direct current (DC) circuit analysis, circuit theorems and basic electrical measurements. An introduction to sinusoidal waveforms and Multisim 14 computer software is also included.

B. Related Program Outcomes:

ABET/Student Outcomes

a. An understanding of the analytical skills associated with electrical engineering technology, as evidenced by the ability to perform a circuit mesh analysis and / or a circuit node analysis.

b. An ability to select and apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies.

c. An ability to conduct, analyze, and interpret experiments concerning resistive DC electrical circuits, as evidenced by the data and data analyses associated with laboratory notebooks and reports.

e. An ability to function as part of a team, as evidenced by attendance and participation in the conduct of laboratory experiments with laboratory partners.

f. An ability to identify, analyze and solve technical problems associated with electrical engineering technology, as evidence by the ability to solve an assortment of electrical circuit problems on the final exam.

g. An ability to communicate effectively, as evidenced by short format and long format laboratory reports.

EET Program Outcomes

a. The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.

Course Objectives:

In this course students are expected to:

1. Develop an understanding of the analytical techniques used for DC resistive circuits.
2. Develop an understanding of the laboratory skills used to evaluate DC resistive circuits.
3. Analyze and interpret laboratory data from basic DC resistive circuits.
4. Work effectively in the laboratory with lab partners.
5. Identify and solve DC resistive circuit problems.
6. Communicate the results of DC circuit analyses in written reports.

D. Course Outline – Major Content Areas

- Basic electrical components and quantities.
- Definitions of voltage, current and electrical resistance.
- Ohm's Law, electrical energy and power.
- Series circuit analyses.
- Parallel circuit analyses.
- Series / parallel circuit analyses.
- Circuit theorems – superposition, Thevenin's theorem and Norton's theorem.
- Mesh current analysis techniques.
- Node voltage analysis techniques.
- Introduction to sinusoidal currents and voltages.

E. Major Laboratory Topics

- Resistor color codes.
- Voltage and current measurements.
- Ohm's Law.
- Power in DC resistive circuits.
- Series DC resistive circuits.
- Parallel DC resistive circuits.
- An introduction to the Multisim 7 simulation software.
- Series / parallel DC resistive circuits.
- Voltage divider loading effects.
- Wheatstone bridge circuits.
- Verification of a mesh current analysis.
- Verification of a Thevenin's theorem analysis.
- An introduction to the oscilloscope and the function generator.

FJN – 2/22/05