COLLEGEWIDE COURSE OUTLINE OF RECORD

EECT 111, INTRODUCTION TO CIRCUIT ANALYSIS

COURSE TITLE: Introduction to Circuit Analysis
COURSE NUMBER: EECT 111
PREREQUISITES: MATH 100 Intermediate Algebra or MATH 122 Applied Technical Mathematics.
COREQUISITES: MATH 100 Intermediate Algebra or MATH 122 Applied Technical Mathematics.
SCHOOL: Technology
PROGRAM: Electronics and Computer Technology
CREDIT HOURS: 4
CONTACT HOURS: Lecture: 3 Lab: 2
DATE OF LAST REVISION: Spring, 2014
EFFECTIVE DATE OF THIS REVISION: Fall, 2014

CATALOG DESCRIPTION: Voltage, current, resistance, Ohm's law, Kirchhoff's laws, resistance combinations, and Thevenin's, Norton's, and superposition theorems are studied. DC and AC circuits are studied and utilized with basic AC terminology described. The performance of ideal transformers, capacitors and inductors, and first order RLC circuits are investigated. Fundamental analog electronic circuits are utilized in the lecture and laboratory to enhance the understanding of basic laws and theorems.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course, the student will be expected to:

1. Recognize and apply basic electrical/electronics units and terminology, including prefix notation, charge, current, voltage, resistance, conductance, energy, power, capacitance and inductance.
2. Utilize the scientific calculator to solve electronics circuit problems.
3. Identify and apply electronic devices and their corresponding schematic symbols, including voltage and current sources (AC and DC), resistors, potentiometers, transformers, capacitors, inductors, and, in the laboratory, diodes, light emitting diodes, bipolar junction transistors, and op amps.
4. Calculate node voltage, convert DC voltage sources to bubble notation, and distinguish between electrical, common, and chassis ground.
5. Distinguish between real and ideal voltage and current sources and properly model real sources.
6. Identify and calculate basic parameters and sketch the sine, triangle, and square wave.
7. State, apply and discuss the historical significance of the laws and rules of electrical/electronic circuit analysis including: Ohm's law, Kirchhoff's Voltage and Current Laws, the power rule, the voltage divider rule, and the current divider rule.

8. State and apply maximum transfer loading effects in transferring maximum voltage, current, or power.
9. Calculate ideal transformer parameters of primary and secondary reflected resistances, voltages and currents.
10. Apply the principles of circuits analysis to series circuits, parallel circuits, series-parallel circuits, and basic analog electronic circuits; principles include the use of resistor reduction, source conversion, superposition, Thevenin's Theorem, and Norton's Theorem.
11. Use the results of the appropriate first-order differential equation and the initial steady state device models of the capacitor and inductor to analyze DC switching RC and RL circuits.
12. Practice circuit construction (interpreting schematics) and use the digital multi-meter, the oscilloscope, and RCL meter to perform electronic measurements and recognize meter-loading impacts.
13. Apply basic laws to electronics circuits.

COURSE CONTENT: Topical areas of study include –

Circuit grounding	Basic electrical/electronic units and terminology
AC waveforms	Calculate and solve electronics circuits problems
Ohm's law	Electronics components identification
Kirchhoff's laws	Schematic symbols and diagrams
Power rule	Real and ideal voltage and current sources
Series circuits	Circuit breadboading and construction
Parallel circuits	Voltage and current divider rules
Superposition	Maximum transfer loading effects
Norton's theorem	Ideal transformer parameters
Thevenin's theorem	Basic analog electronics circuits
Series-parallel circuits	DC switching RC and RL circuits
Node voltage calculations	Test equipment and instruments

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