

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: ELEC 210 Department: Electrical Engineering Tech.

Course Title: Basic Electricity 2 Semester: Spring Year: 1999

Objectives/Competencies

Course Objective	Competencies
1. Understand and apply Ohms Law in AC circuits.	1. Demonstrate by exam an understanding of AC voltage, current and resistance. 2. Demonstrate by solving complex electrical problems and ability to use Ohms law for AC. 3. Demonstrate by taking measurements of AC voltage, current and resistance and understanding of Ohms law.
2. Analyze complex series and parallel resistive circuits.	1. Demonstrate by exam an understanding of series and parallel AC circuits. 2. Demonstrate by setting up complex series and parallel circuits and making voltage current and resistance measurements in the laboratory.
3. Understand fundamental trouble shooting techniques.	1. Demonstrate by using an ohmmeter how to locate a defective inductor or capacitor. 2. By exam, analyze series and parallel or combination circuits for shorts or opens, by applying Ohms law.

Course Objective	Competencies
4. Understand and use Thevenin's Theorem in AC circuits.	<ol style="list-style-type: none"> 1. Demonstrate in the lab how a complex circuit can be reduced to one source and one load. 2. By exam, demonstrate an understanding of applying Thevenin's Theorem to a complete AC circuit.
5. Understand and apply the Superposition Theorem to AC circuits.	<ol style="list-style-type: none"> 1. By experiment, show that a multi-source AC and DC problem can be solved using the Superposition Theorem. 2. By exam, solve complex multi-source electrical problems using the Superposition Theorem.
6. Use Kirchoff's Laws for AC.	<ol style="list-style-type: none"> 1. By experiment, prove all four of Kirchoff's Laws for AC circuits. 2. By exam, solve complex AC electrical problems using any number of Kirchoff's Laws.
7. Understand and use capacitors and inductors in DC and AC circuits.	<ol style="list-style-type: none"> 1. By experiment, measure voltage and current in a capacitor circuit using AC or DC. 2. By exam, solve complex electrical AC and DC capacitive problems.
8. Understand and use a calculator to solve AC problems.	<ol style="list-style-type: none"> 1. Solve electrical problems using scientific notation, engineering prefixes using a standard engineering calculator.
9. Be able to measure AC current, voltage and resistance.	<ol style="list-style-type: none"> 1. In the lab, take standard AC electrical measurements using a digital multimeter.

Course Objective	Competencies
10. Be able to build simple AC electrical circuits.	2. In the lab, use the oscilloscope to measure AC or DC voltages phase angle and frequency. 1. In lab, build AC electrical circuits using a schematic drawing.
11. Understand impedance, reactance, apparent power, reactive power and real power.	1. In the lab, measure AC voltage and current and determine impedance and/or reactance of a complex capacitor inductor resistor circuit. 2. By exam, solve complex AC problems solving for impedance, apparent power, reactive power and real power.