SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
ELT 210S CIRCUITS II
3 CREDIT HOURS

COURSE DESCRIPTION

Presents the principles of resistance, capacitance, and inductance in alternating current circuits. The student will develop a thorough understanding of the application of Ohm's Law, Kirchhoff's Laws and the power formula to AC series, parallel circuits, and series-parallel circuits. Phasors and complex number mathematics will be utilized. The student will study resonance characteristics, filters, and power relations. The use of metric prefixes, engineering notation, and equation manipulation will be emphasized. The student will be introduced to the use and care of the oscilloscope. Prerequisite: ELT 110S. Co-requisite: MTH 123S. Lab fee.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
2	1. Explain the electrical characteristics of capacitance, inductance, reactance and impedance.	1, 2, 4
4	2. Analyze series, parallel, and series-parallel AC networks by use of complex numbers and phasor algebra.	1, 2, 4
3	3. Apply Thevenin's, Norton's and superposition theorems to AC networks.	1, 2, 4
3	4. Apply mesh analysis to AC networks.	1, 2, 4
3	5. Apply nodal analysis to AC networks.	1, 2, 4
3	6. Apply the fundamental laws of magnetic circuits and transformer action.	1, 2, 4
3	7. Determine power in AC circuits and correct for lagging power factors.	1, 2, 4
3	8. Complete Delta-Wye and Wye-Delta conversions in AC networks.	1, 2, 4
5	9. Design circuits for maximum power transfer in an ac network.	1, 2, 4
4	10. Analyze the frequency response of RL and RC circuits.	1, 2, 4
2	11. Describe resonance in AC circuits.	1, 2, 4
5	12. Design passive filters.	1, 2, 4

CORE VALUES

The Core Values are a set of principles, which guide in creating educational programs and environments at Edison. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Wave shape, Period, and Frequency Measurements
2. Operation and Application of the Triggered Oscilloscope
3. Inductance Reactance
4. Phasor Algebra as Applied to AC Circuits
5. RL circuits in AC Circuits
6. Magnetic Coupling and Transformer Action
7. Capacitive Reactance
8. RC circuits in AC Circuits

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9. RLC Circuits in AC Circuits
10. Network Solution Methods
11. Power Relations: Real Power Apparent Power and Reactive Power
12. Circuit Conditions Near and at Resonance
13. Passive Filters