

---

**COURSE SYLLABUS**

**DIVISION:** Workforce Services

**Revised:** January 2015

**CURRICULUM:** Electrical Electronics Engineering Technology

**COURSE NUMBER AND TITLE:** ELE 114, Electricity II

**CREDIT HOURS:** 3

**HOURS/WEEK LECTURE:** 3

**HOURS/WEEK LAB:** 0

**LECTURE/LAB COMBINATION:** 3

---

**I. CATALOG DESCRIPTION:**

Teaches principles of electricity covering fundamentals, devices, and components in both DC and AC circuits

**II. RELATIONSHIP OF THE COURSE TO CURRICULUM OBJECTIVES:**

The course is primarily designed to develop the student's understanding of basic electrical concepts and principles related to AC circuits.

**III. REQUIRED BACKGROUND:**

Prerequisites: ELE 113, ELE 123 and Calculations I

Co-requisites – ELE 124, Calculations II or instructor's permission

**IV. COURSE CONTENT:**

1. Review of magnetism and electromagnetism
2. Alternating current and voltage, wave shapes, measurements
3. Power in AC circuits
4. Capacitance, RC circuits and devices in AC circuits
5. Inductance, LC circuits and devices in AC circuits
6. Transformers and transformer concepts
7. Series and parallel RCL concepts for AC circuits
8. Application of measuring devices and instruments
9. Impedance Calculations/Series-Parallel
10. Resonance, BW and circuit Q
11. Three-phase power
12. Introduction to AC motors

**V. LEARNER OUTCOMES :****VII. EVALUATION:**

Demonstrate an understanding of producing a DC and an AC voltage and current by Electromagnetic Induction	Written quizzes and tests Oral and written reports Homework and projects
Demonstrate an understanding of the concept of and the different measures of Alternating Current including conversions from one measure to another	
Demonstrate an understanding of the construction and function of a transformer and the losses associated therewith	
Calculate and explain inductive and capacitive reactance and how they factor into the calculations of impedance for both series and parallel AC circuits and how these circuits are used as filters	
Calculate and demonstrate an understanding of series and parallel resonance, circuit Q and Bandwidth	
Demonstrate an understanding of resonance and the conditions that occur when a circuit is operating at resonance	
Demonstrate an understand of the advantages of three-phase power, how it is generated and how the loads and sources are configured	
Demonstrate an understanding of AC motor principles	

**VIII. The course supports the following general education goals/objectives:**DCC Educational Objectives

- Communication
- Critical Thinking
- Information Literacy
- Quantitative Reasoning