

**ELC 215**  
**ELECTRICAL MAINTENANCE**

**COURSE DESCRIPTION:**

Prerequisites: ELC 117

Corequisites: None

This course introduces the theory of maintenance and the skills necessary to maintain electrical equipment used in industrial and commercial facilities. Topics include maintenance theory, predictive and preventive maintenance, electrical equipment operation and maintenance, and maintenance documentation. Upon completion, students should be able to perform maintenance on electrical equipment in industrial and commercial facilities. Course Hours Per Week: Class, 2. Lab, 3. Semester Hours Credit, 3.

**LEARNING OUTCOMES:**

A student that successfully completes this course will be able to:

- a. Read control system schematics.
- b. Recognize the elements and operations of circuits.
- c. Identify the types of faults.
- d. Describe the types of controls and their operation.
- e. Practice hands-on troubleshooting.

**OUTLINE OF INSTRUCTION:**

- I. Review of circuits and schematics
  - A. Components
  - B. Ladder diagrams
  - C. Wiring diagrams
- II. Checking Sequence Chart
  - A. Interpreting Checking Sequence Charts
  - B. Logical troubleshooting
- III. Short circuits and ground faults
  - A. Detection
  - B. Prevention
  - C. Sensing equipment

- IV. Overload protection
  - A. Devices
  - B. Control circuit protection
  - C. Motor circuit protection
  
- V. Motor control circuits
  - A. Three-wire-start/stop circuits
  - B. Automatic sequence starting
  - C. Plug stop and anti-plug circuits
  - D. Reduced voltage starting circuits
  - E. Jogging circuits
  - F. Reversing circuits
  - G. Multi-speed circuits
  
- VI. Preventative maintenance
  - A. Electrical components
  - B. Mechanical drives
  - C. Lubrication
  - D. Solvents

**REQUIRED TEXTBOOKS AND MATERIALS:**

Electrical Troubleshooting. Schoolcraft Publishing: Electrical Equipment Series 730.

**STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.