

ELC-215 Electrical Maintenance

COURSE DESCRIPTION:

Prerequisites: None

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:

Upon completing requirements for this course, the student will be able to:

1. Understand what mechanical failures typically occur on industrial equipment.
2. Learn about the periodic maintenance that must be performed on industrial equipment.
3. Review the operation of several basic electrical control circuits.
4. Read control system schematics.
5. Develop an understanding of the theory of operation of control circuits.
6. Identify the types of faults that may occur in control circuits.
7. Develop a systematic approach to troubleshooting.
8. 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 TEXTBOOK AND MATERIAL:

The textbook and other instructional material will be determined by the instructor.