

**ELC 115**  
**INDUSTRIAL WIRING**

**COURSE DESCRIPTION:**

Prerequisites: ELC 113

Corequisites: None

This course covers layout, planning, and installation of wiring systems in industrial facilities. Emphasis is on industrial wiring methods and materials. Upon completion, students should be able to install industrial systems and equipment. Course Hours Per Week: Class, 2. Lab, 6. Semester Hours Credit, 4.

**LEARNING OUTCOMES:**

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

- a. Expand on the knowledge learned in ELC 113.
- b. Read and understand commercial and industrial plans.
- c. Properly install electrical devices in commercial and industrial installations according to the requirements of the National Electrical Code.

**OUTLINE OF INSTRUCTION:**

- I. Safety
  - A. Electrical
  - B. Mechanical
  
- I. Construction plans and specifications
  - A. Commercial
  - B. Industrial
  
- I. Substations
  - A. Transformers
    - 1.) Single Phase
    - 2.) Three Phase
    - 3.) Transformer Banks
    - 4.) Transformer Vaults
  - B. High voltage section
  - C. Low voltage section
  - D. Metering equipment
  
- I. Electrical services for commercial and industrial buildings

- A. Conductor and raceway sizing
- B. Grounding
  
- I. Branch circuits and feeders
  - A. Load computation
  - B. Feeder bus systems
  - C. Conductor and raceway sizing
  - D. Installations
  
- I. Low voltage controls
  - A. Remote controlled lighting
  - B. Alarm systems
  - C. Signaling systems
  - D. Installation methods
  
- I. Switch control of lighting circuits
  - A. Circuit diagrams
  - B. Installations
  
- I. Appliance circuits
  - A. Branch circuit requirements
  - B. Installations
  - C. Control and protection
  
- I. Heating and cooling systems
  - A. Protection & control of electric heating and cooling equipment
  - B. Installations
  - C. NEC requirements
  
- I. Special systems
  - A. Special equipment
  - B. Communication systems
  - C. Conduit systems
  - D. Grounding
  
- I. Industrial lighting
  - A. Incandescent fixtures
  - B. Fluorescent fixtures
  - C. High intensity discharge systems
    - 1.) Low pressure sodium
    - 2.) High pressure sodium
    - 3.) Metal halide
  - D. Installations
  
- I. Emergency power systems
  - A. Circuit wiring

- B. Circuits for lighting and power
- I. Overcurrent protection devices
  - A. Fuses
  - B. Circuit breakers
- I. Hazardous locations
  - A. Class I locations
  - B. Class II locations
  - C. Class III locations

**REQUIRED TEXTBOOKS AND MATERIAL:**

Mullin, Ray C. Electrical Wiring Commercial. Delmar Publishers, Inc. 12th<sup>ed.</sup> 2005.

National Fire Protection Association, National Electrical Code.

**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.