

ELC 118
NATIONAL ELECTRICAL CODE

COURSE DESCRIPTION:

Prerequisites: None

Corequisites: None

This course covers the use of the current National Electrical Code. Topics include the NEC history, wiring methods, overcurrent protection, materials, and other related topics. Upon completion, students should be able to effectively use the NEC. Course Hours Per Week: Class, 1. Lab, 2. Semester Hours Credit, 2.

LEARNING OUTCOMES:

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

- a. Recognize symbols and drawings associated with electrical blueprints.
- b. Design electrical systems based on calculations related to blueprint dimensions.
- c. Perform calculations related to circuit loads, service loads, conductor sizing, boxsizing, raceway sizing, and overload protection.

OUTLINE OF INSTRUCTION:

- I. Single family dwelling installations
 - A. Service entrance equipment selection
 - 1.) Calculations based on the National Electrical Code (NEC)
 - 2.) Clearance for service drops
 - 3.) Service sizing
 - (a.) Disconnect selection
 - (b.) Heads and conductors
 - (c.) Grounding and bonding
 - (d.) Conduit and raceway
- I. Multi-family dwelling installations
 - A. Service entrance equipment
 - 1.) NEC calculations
 - 2.) Selecting service equipment
 - 3.) Conductor size and type
 - 4.) Grounding
 - B. Heat and air load calculations
 - 1.) Conductor selection

- 2.) Circuit overload protection
- B. Branch circuits
 - 1.) NEC calculations
 - 2.) Conductor size and type
 - 3.) Box sizing
 - 4.) Raceway selection
 - 5.) Circuit protection
 - 6.) Grounding and bonding
- B. Fixtures and appliance
 - 1.) Conductor selection
 - 2.) Raceway selection
- I. Commercial installations
 - A. Service entrance equipment selection
 - 1.) Load calculations
 - (a.) Transformer loads
 - (b.) Circuit protection
 - (c.) Raceway sizing and routing
 - 2.) Branch panelboards
 - (a.) NEC calculations
 - (b.) Circuit protection
 - (c.) Conductor size and type
 - (d.) Raceway and routing
 - A. Telephone, communication and computer systems
 - 1.) NEC requirements
 - 2.) Power requirements
 - 3.) Outlet installations
 - 4.) Raceway sizing and routing
 - A. Special wiring methods
 - 1.) Flat wiring
 - 2.) Flexible wiring systems
- I. Industrial installations
 - A. Substation transformers
 - 1.) Installation requirements
 - 2.) Metering and service
 - 3.) Grounding and bonding
 - A. Busways
- I. Specialized and hazardous locations
 - A. NEC classes of hazardous locations
 - B. Divisions within hazardous location classes

- C. Methods for reducing hazards
 - 1.) Application of seals
 - 2.) Location of equipment

REQUIRED TEXTBOOKS AND MATERIAL:

National Electrical Code. NFPA 70. 2002 Edition.

Holt, Charles M. Understanding The National Electrical Code. Delmar Publishing Co., 1996.

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.