

EHS 113
OSHA ELECTRICAL SAFETY

COURSE DESCRIPTION:

Prerequisites: None

Corequisites: None

This course covers OSHA electrical safety regulations that apply to general industry. Emphasis is on controlled electrical hazards in the workplace, understanding ground paths, recognizing electrical hazards, and interpreting electrical standards. Upon completion, students should be able to demonstrate an understanding of OSHA safety regulations within general industry.

Course Hours Per Week: Class, 2. Semester Hours Credit, 2.

LEARNING OUTCOMES:

Upon completion of this course, the student will be able to:

- a. Understand the fundamentals of AC and DC circuits.
- b. Recognize common electrical hazards present in general industry.
- c. Recognize and prevent electrical shocks due to ground faults.
- d. Understand OSHA requirements for branch circuits in general industry.
- e. Understand the proper use of ground fault circuit interrupters.
- f. Recognize common OSHA electrical safety violations in the workplace.
- g. Implement electrical lockout/tagout procedures.

OUTLINE OF INSTRUCTION:

- I. Risk
 - a. Definitions: hazard, danger, damage, risk
 - b. Accidents
 - c. Risk perception
 - d. Hazard control and design
- II. Electrical fundamentals
 - a. Ohm's law
 - b. Insulators and conductors
 - c. Health effects
 - d. AC and DC circuits
- III. Branch circuits
 - a. Wiring methods/plugs and receptacles
 - b. polarity
 - c. Grounding

- IV. Circuit and equipment testing
 - a. Testing branch circuits
 - b. Receptacles
 - c. Extension cords
 - d. Plug- and cord- connected equipment
 - e. Voltage detectors

- V. Ground Fault Circuit Interrupters (GFCI's)
 - a. Theory
 - b. GFCI Configurations
 - c. Applications

- VI. Flammable/Combustible Materials (Hazardous Locations)
 - a. Combustion and explosions
 - b. Electrical ignition sources
 - c. Controlling ignition hazards

- VII. Electrical lockout/tagout
 - a. Definitions and standards
 - b. Need for hazardous energy control
 - c. Written program
 - d. Training

- VIII. Standards/Common electrical deficiencies
 - a. Relationship between OSHA and National Electric Code
 - b. Other standards: ANSI, ASTM
 - c. Common deficiencies

REQUIRED TEXTBOOK AND MATERIALS:

Bloswick, Donald and Budnick, Peter. *An Introduction to Electrical Safety for Engineers*. Cincinnati, Ohio: United States Department of Health and Human Services, National Institute for Occupational Safety and Health. (1993).

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.