

Electrical Safety for Industrial Facilities

4 Days, 2.8 CEUs

Electrical hazards can result in serious injury or death of personnel working on or around electrical equipment. This course provides information to ensure a safer workplace. Participants are trained to understand electrical hazards, electrical safety regulations, the use of safe work procedures and personal protective equipment (PPE).

It is difficult to keep up with revisions and updates to OSHA, NFPA 70E, NEC and personal protective equipment technical improvements. In this course the participant is familiarized with the latest changes in the electrical safety industry. Information is provided to help realize the benefits of complying with regulations and standards; such as fewer electrical accidents and improved electrical system reliability with the corresponding reductions in losses due to accidents and injuries.

This course is intended for new, multi-craft or experienced electricians, technicians, engineers, supervisors and safety managers that install, maintain, repair, troubleshoot or work around industrial electrical systems. This course provides critical information to help meet the mandated training requirements of OSHA 1910.332. The participant should have basic knowledge of AC/DC electricity.

Lab and Classroom Attire

AVO is committed to the personal safety of each participant and requires safety glasses, long pants and ANSI rated "safety-toe" work shoes for lab activities. Lecture courses may involve a tour of a work or shop area and for this reason open-toe shoes and shorts are not considered appropriate attire for the classroom.

Learning Objectives:

To receive 2.8 CEUs, the participant must attend 4 days of class (28 contact hours) and attain a minimum grade of 80% on the final exam. Upon completion of this course, the participants will demonstrate that they are able to:

- Explain the hazards and effects of electricity.
- Interpret applicable regulations.
- Perform hazardous energy control for industrial facilities as required by OSHA.
- Employ installation of temporary grounding for personal protection.
- Select appropriate personal protective equipment for a variety of applications.
- Apply the general requirements of electrical regulations and standards to establish an electrically safe work environment.
- Choose correct grounding methods for protection of personnel and electrical systems.

SCOPE

Day 1* (7 contact hours)

- I. Introduction (0.5 hr)
 - A. Schedule
 - B. Course Outline
- II. Hazards of Electricity (5 hrs)
 - A. Electrical Shock
 - B. Electrical Arc Flash
- Lunch
 - C. Electrical Arc Blast

- III. Electrical Safety Regulations and Standards (1.5 hrs)
 - A. OSHA
 - B. Overview of the Regulations and Standards

Day 2 (7 contact hours)

- IV. Deenergized Work (LOTO) (4 hrs)
 - A. Deenergization
 - B. Confirming a System Is Deenergized
 - C. One-Line Diagrams
 - D. Lockout/Tagout
 - E. Application of Control

*Class scheduling times may vary based on discussions and size of class

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SCOPE (continued)

- F. Additional Requirements
 - G. Additional Reg. Requirements for Electrical Lockout
 - H. Typical Minimal Lockout or Tagout System Procedures
- Lunch
- V. Personal Protective Grounding .. (3 hrs)
 - A. Regulatory Requirements for Grounding
 - B. Purpose of Protective Grounds
 - C. Sizing of Protective Grounds
 - D. Effects of Current and PPE Grounding
 - E. Grounding Equipment
 - F. Personal Protective Ground Jumper Testing
 - G. Grounding Equipment Manufacturers/Suppliers
 - H. Application of Protective Grounds
 - I. Induced Voltages and Currents on Deenergized Circuits and Equipment

Day 3 (7 contact hours)

- VI. Energized Work (5 hrs)
 - A. Definition of Energized Work
 - B. Definition of Qualified Person
 - C. Electrical Hazard Risk Assessment Considerations
 - D. Training Requirements for a Qualified Person
 - E. Regulatory Requirements for Energized Work
- Lunch
- VII. Personal Protective Equipment (2 hrs)
 - A. Protective Techniques
 - B. Electrical Protective Equipment
 - C. Arc Flash Protective Equipment
 - D. Arc Blast Protective Equipment
 - E. Other Protective Equipment
 - F. Energy Detection Equipment

Day 4 (7 contact hours)

- VIII. General Requirements (3 hrs)
 - A. Examination, Installation, and Use of Electrical Equipment
 - B. Electrical Equipment Work Space
 - C. Requirements for Industrial Facilities with Utility-Like Installations
 - IX. Permanent System Grounding (3 hrs)
 - A. Purpose and Methods of Grounding Systems
- Lunch
- B. NESC® – Section 9, Grounding Methods for Electrical Supply and Communication Facilities
 - C. Ground Testing
- X. Conclusion (1 hr)
 - A. Review
 - B. Final Exam



STANDARD EQUIPMENT LIST
Electrical Safety For Industrial Facilities
COURSE NO. 290, REV 7

REVISED: August 2023

BY: C. Marchant

DAYS: 4 DAYS

TEXT (PER 1 STUDENT)	
1	ELECTRICAL SAFETY FOR INDUSTRIAL FACILITIES COURSE #290, REV.7, August 2023

MATERIALS NEEDED (PER CLASSROOM)	
QUANTITY	ITEM
*1	PROJECTOR OR TV WITH PROJECTION CAPABILITIES
*1	DRY ERASE BOARD WITH MARKERS AND ERASERS
*10	STUDENT TABLES
*10	STUDENT CHAIRS

FOR VIRTUAL CLASSES:
CONTENT MATERIAL WILL BE PROVIDED IN DIGITAL FORMAT