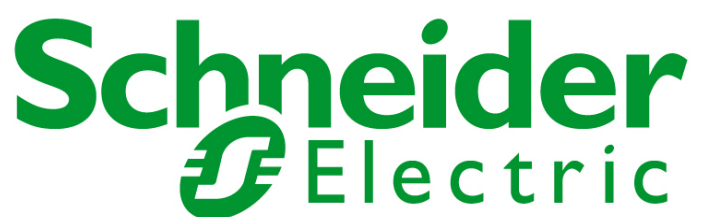


**ELECTRICAL
SAFETY IN THE
WORKPLACE —
(7 HOUR ON-SITE AND
REGIONAL COURSE)**

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Course Outline

Course Code: TRNOSSAFARC01



01/18/2018 CEU 294

CEU Credit 0.7 Hrs

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A qualified person is one who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations, and has received safety training to identify and avoid hazards involved.

COURSE OBJECTIVES

Upon successful completion of this Course, you will be able to:

- Define the National Fire Protection Agency (NFPA) and the Occupational Safety and Health Administration (OSHA.)
- Identify the limitations of the NFPA and relationship to OSHA as they pertain to electrical safety.
- Recognize 2 general categories of electrical hazards.
- Identify the 5 primary effects on the human body resulting from exposure to electrical shock, or ARC Flash.
- Identify the 11 components of an Electrical Safety Program using Article 110, and Annex E.
- Identify the requirements of a successful Lockout/Tagout Program using Article 120 and Annex G.
- Identify the Limits of Approach as described in Article 130, Annex C and Table 130.4(D)(a).
- Select the appropriate Personal Protective Equipment (PPE) for use when working with energized equipment using Article 130, Table 130.7(C)(15)(a), Table 130.7(C)(15)(b) and Table 130.7(C)(15)(c).
- Recognize compliant equipment labeling using Article 130.
- Identify the principles and safety procedures associated with the hazards of working on energized equipment using Article 130.

MODULE 1 - INTRODUCTION TO THE NFPA, OSHA, AND USE OF PUBLICATIONS

MODULE 1 – OBJECTIVES

- Provided a copy of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” and presentation of selected information originating from the NFPA website (<http://www.nfpa.org/about-nfpa/nfpa-overview>) you will be able to perform the following tasks with 100% accuracy:
 - Identify the purpose, roles and limitations of the NFPA and OSHA, with regards to electrical safety
 - Understand the differences between the scope of what is, and is not covered, in the 2018 NFPA 70E Standard
 - Successfully demonstrate the usability features and structure of the NFPA 70E through hands-on exercises to locate information, determine revision and deletion of content from the previous Edition, and recognize new content offered in the current Edition
 - Define who is responsible for employees safety in the workplace relative to electrical hazards
- Provided selected information from the OSHA Federal Website (<https://www.osha.gov/about.html>) and OSHA Title 29 CFR Part 1910 - General Industry Regulations Publication Updated through January 1, 2014, you will be able to identify OSHA’s Mission, and the 3 primary Subparts that correlate with the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace with 100% accuracy.

MODULE 2 - INTRODUCTION TO ELECTRICAL HAZARDS, SAFETY IN THE WORKPLACE, AND ARC FLASH

MODULE 2 – OBJECTIVES

- Provided a copy of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” you will be able to match the 2 General Categories of Electrical Hazards (Electric Shock and Electric Burns) with their characteristics in Annex K, with 100% accuracy.
- Based on selected information presented originating from the NFPA, OSHA Publications and Case Studies, and the OSHA website (<https://www.osha.gov/>) you will be able to identify within 100% accuracy:
 - What causes shock
 - Why electrical hazards are important
 - What the 5 types of electrical injuries resulting from shock are
 - What the 5 primary effects shock has on the human body are
 - What protective measures and safety procedures can workers take to maximize safety while working in an electrical environment
- After viewing the video, “It’s a Matter of Your Safety,” you will be able to discuss what electrical hazards exist in the workplace that affect human life and equipment, the importance of following established safe work guidelines, and use of personal protective equipment.
- After viewing the video, “ARC Flash Awareness,” you will discuss the personal impact that 2 separate Arc Flash incidents had on 3 electrical workers.

MODULE 3 - ARTICLE 110 OF THE NFPA 70E, GENERAL REQUIREMENTS FOR ELECTRICAL SAFETY-RELATED WORK PRACTICES

MODULE 3 – OBJECTIVES

- Using Annex E of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” you will be able to identify, with 100% accuracy, the 3 core elements of a typical Electrical Safety Program, to include:
 - Typical Program Principles
 - Typical Program Controls
 - Typical Program Procedures

- Provided a copy of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” you will be able to identify with 80% accuracy, the 11 main components to be included within an effective Electrical Safety Program as described in Article 110:
 - General Program Requirements
 - Inspection
 - Condition of Maintenance
 - Awareness and Self-Discipline
 - Program Principles
 - Program Controls
 - Program Procedures
 - Risk Assessment Procedures
 - Job Safety Planning and Job Briefings
 - Incident Investigation
 - Auditing

MODULE 3 – OBJECTIVES (CONT'D)

- Using Annex I of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as an example, you will be able to recognize key areas of consideration that may be included in a “Job Briefing Checklist” as a part of an overall Electrical Safety Program.
- Using Article 110.4 of the “2015 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to identify the proper use of test instruments and equipment by qualified personnel.

MODULE 4 – ARTICLE 120 OF THE NFPA 70E, ESTABLISHING AN ELECTRICALLY SAFE WORK CONDITION

MODULE OBJECTIVES

- Using Article 120.1 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to identify, with 100% accuracy, the requirements for a successful Lockout/Tagout Program.
- Using Article 120.2 of the “2015 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to recognize, with 100% accuracy, when electrical conductors and circuit parts are considered to be in an electrically safe work condition.

MODULE 4 – OBJECTIVES (CONT'D)

- Using Article 120.3 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” you will be able to:
 - Determine the differences, with 100% accuracy, between Lockout and Tagout.

Recognize the employer’s responsibility to supply and employee’s use lockout/tagout equipment necessary to execute the requirements of 120.3.
- Using Article 120.4 you will be able to identify key components for establishing a set of effective Lockout/Tagout Procedures in the workplace.
- Using Article 120.5 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” you will be able to:
 - Recognize the 8 steps that need to be performed to establish and verify an “Electrically Safe Work Condition”

MODULE 5 – ARTICLE 130 OF THE NFPA 70E, WORK INVOLVING ELECTRICAL HAZARDS

MODULE OBJECTIVES

- Using Article 100 of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to identify, with 100% accuracy, the following 3 “limits of approach” to be considered when working on energized equipment:

- Arc Flash Boundary
 - Limited Approach Boundary
 - Restricted Approach Boundary
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- Using Article 130.2 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to define, within 100% accuracy, what is meant by “normal operation” of electrical equipment.
 - Using Article 130.2 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to recognize, within 100% accuracy, when electrical equipment need not be required to be de-energized to allow work to proceed.
 - Using Article 130.2 of the “2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace” as a reference, you will be able to identify, with 100% accuracy, what 2 conditions must be met to require use of an “Electrical Work Permit.”
 - Using Article 130.4, Annex C, and Table 130.4(D)(a) of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to identify, with 100% accuracy, what the correct Approach Boundaries are for selection of proper shock protection with Alternating-Current Systems.
 - Using Article 130.5 of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to identify, with 100% accuracy, when an “ARC Flash Risk Assessment” shall be performed, and what must be included in that Assessment.

MODULE 5 – OBJECTIVES (CONT'D)

- Using Article 130.5 of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to list, with 100% accuracy, what information is required to be included on equipment labels.
- Using Article 130.7 of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to describe best practices for the selection, care, and maintenance for the 6 types of Personal Protective Equipment to be considered for use when working on energized equipment.
- Using Table 130.7(C)(15)(a) and 130.7(C)(15)(b) of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to determine, with 100% accuracy, if Arc Flash Personal Protective Equipment is required for use when working on energized electrical equipment.
- Using Table 130.7(C)(15)(c) of the 2018 Edition of the NFPA 70E Standard for Electrical Safety in the Workplace, you will be able to identify, with 100% accuracy, what the 4 Arc-Flash Hazard Personal Protective Equipment Categories are for proper selection of what Personal Protective Equipment is to be worn while working on energized equipment.

