Arc Flash/2021 NFPA 70E Electrical Safety Training

This course provides an in-depth understanding of Electrical & Arc Flash hazards, and the latest NFPA 70E and OSHA regulations. Students will learn practical, best safe work practices for electrical safety and how to apply in the real-world.
The training is complete with lecture, hand-on exercises, PPE & tool demonstrations.
Attendees are able to interact and ask questions throughout the entire class.
Students are tested and issued certificates upon completion of this training.

This training covers OSHA requirements 1910.331 – 1910.335 and the 2021 NFPA 70E Standard for Electrical Safety in the Workplace.

Introduction

- Lays out the purpose and scope of what's covered and not covered
- Defines Mandatory Rules and Permissive Rules
- Minimizing Arc Flash Hazards **(not included in 70E)**

General Requirements

- **Scope:** Chapter 1 covers electrical safety related work **practices and procedures** for employees who are exposed to an electrical hazard in workplaces.
- **Purpose:** These practices and procedures are intended to provide for employee safety relative to **electrical hazards in the workplace**.
- **Employer/Employee Responsibilities:** Employer provides employees with training in the employer's safety related work practices and procedures. The employee shall comply with the safety-related work practices and procedures provided by the employer.
- **Hazard elimination** shall be the **first priority** in the implementation of safety-related work practices.
- **Electrical Safety Program:** The employer shall **implement and document** a program that is appropriate to the risk associated with electrical hazards.
- **Condition of Maintenance:** Are you maintaining your electrical equipment?
- **Electrical Safety Auditing:** written program (every 3 years) and procedures (annually)
- **Training Requirements**: must train (re-train) every 3 years
- **Emergency Response Training:** AED CPR training and **refresher/documentation.** This Emergency Response Training also includes Incident Contact Release.

- **Employee Training:** Qualified Person, Unqualified Persons, **Task Qualified (not in 70E)**
- **Retraining** shall be performed at intervals **not to exceed 3 years.**
- **Relationships with Contractors:** hazard awareness communication and documentation

  Test Instruments and Equipment: Hands-on Exercise
- **Portable Electric Equipment:** usage, visual inspections, and repairing/removing
- **GFCI Protection:** when needed, operation and construction

Establishing an Electrically Safe Work Condition (LOTO)

- The Six Steps for Achieving an Electrically Safe Work Condition

Work Involving Electrical Hazards

- **Energized Electrical Work Permit**: when needed and requirements
- **Energized Work Justification:** Additional Hazards or Increased Risk or Infeasibility
- **Energized work approval:** management approvals
- **Exemptions to Work Permit:** when not needed
- **Working While Exposed to Electrical Hazards:** safe work practices
- **Approach Boundaries:** Shock Protection Boundaries (Limited and Restricted)
- **Arc Flash Risk Assessment:** tables used to complete the assessment
- **Arc Flash Boundary:** calculations needed and documented
- **Arc Flash PPE:** selection, inspection, care, and maintenance
- **Equipment Labeling:** minimum requirements and how to read the label
- **Other Precautions for Personnel Activities:** safe work strategies
- **Reclosing Circuits After Protective Device Operation:** hazards involved
- **Safety Interlocks:** usage requirements and limitations
- **Personal and Other Protective Equipment:** Hands-on Exercise
- **Head, Face, Hands, Neck, and Body Protection:** selection and usage
- **Other Protective Equipment:** additional electrical PPE and equipment
- **Insulated Tools and Equipment:** Hands-on Exercise

Overview of key changes for 2021:

- 110.1 Priority: This section was relocated from 105.4 to **emphasize its importance**.
- 110.1(I)(1) Job Safety Planning: An informational note was added referencing an example of a **job safety planning check list** in Informative Annex I.
- 110.4(A) Testing: The text "operating at voltages equal to or greater than 50 volts" was replaced with "where an electrical hazard exists" since there are **more hazards then just the shock hazard.**
- A new informational note states: "For more information on **methods and procedures** to place **capacitors** in an electrically safe work condition, see 360.3, 360.5"
- 120.5(5): **Clarification** was provided with revised text: "Block or relieve stored non-electrical energy devices that could re-energize electric circuit parts."
- Table 130.5(C) A **new task** was added as YES for likelihood of an arc flash incident for any condition. "Operation of a CB or switch the first time after installation or completion of maintenance in the equipment."
- 130.5(G) Incident Energy Analysis Method: **Informational Note was added** stating: "The arc rating of outer layers worn over arc-rated clothing as protection from the elements or for other safety purposes, and that are not used as part of a layered system, shall not be required to be equal to or greater than the estimated incident energy exposure."
- Informational Annex D. Calculation Method: This was **updated** to provide an overview of the new 2018 edition of IEEE 1584.
- Informative Annex R **Working with Capacitors**: This new annex provides additional information regarding capacitors.