



ARC FLASH ELECTRICAL SAFETY [based on NFPA 70E]: 2 DAY HANDS ON ELECTRICAL SAFETY IN THE WORKPLACE



Live Online Training
Single Class Capacity: 15



Onsite – In Class Training
Single Class Capacity: 12

NEW for 2021 - Electrical Safety has been completely updated not just for the changes to the standard this cycle, we have taken student interactions to the next level – introducing both student laptops for simulations and new instructor demonstration equipment to combine the discussion of content and application of material in an in-class interactive format. It provides a “hands-on” experience where attendees perform the same safety skills they must demonstrate in the field. This is what NTT Electrical Safety Training is all about.

The NFPA 70E® Standard for Electrical Safety in the Workplace provides the prescriptive methods for OSHA compliance for electrical safe work. NTT Training provides the interpretation of the standard, hands-on instructor demonstration and student practice for implementing the standard. Laptop, tabletop, and hands-on exercises will have students work with their own copy the NFPA 70E and NTT’s App for Electrical Safety, helping to ensure they understand these requirements.

WHAT THIS COURSE COVERS

- Learning to identify the hazards of an electrical job
- Assessing what can be done to eliminate hazards
- Understanding methods of mitigating hazards
- How to use best industry practices to comply with requirements
- Achieve a safe-as-practical approach to performing electrical work

WHO SHOULD TAKE THIS?

- Electricians
- Maintenance electricians
- Linemen & Utility workers
- Owners & managers
- Safety directors
- Electrical contractors

COURSE OUTCOMES

- Understand the new Risk Assessment approach to Electrical Safety
- Apply OSHA rule 1910.331-335 training requirements and NFPA 70E® standards
- Understand the effect of maintenance on equipment and how it reduces injury
- Describe proper use of test instruments making contact with energized parts
- Perform safe electrical work practices and understand arc flash hazards and boundaries



Every NTT course is eligible for CEUs (or Continuing Education Units) with your governing board approval or your states approval.

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COURSE AGENDA



Interactive Labs

Module 1: ELECTRICAL HAZARDS

- Trainees will receive a brief history of electrical safety, the most recent safety statistics and, identify compliance requirements.
- The students will be given an overview of the hazards of electricity and its effect on the human body. Shock and arc flash.



Trainees will be asked to identify and discuss the associated hazards with the task, the human factor and the equipment. This will be instructor lead using the risk assessment APP (as would be in the real world).

Module 2: ARTICLES 90 & 100: INTRODUCTION TO 2021 EDITION OF NFPA 70E

- Introduction to the NFPA 70E text
- Overview of OSHA and NFPA 70E and how the standard is organized
- Review of the purpose of NFPA 70E, to protect all employees from the hazards arising from the use of electricity in the workplace.
- Article 100, important definitions. Students will review key definitions with the instructor and how they will be returning to Article 100 to look up terms when they run into them throughout the course.



Quiz (LMS) on the material covered in Module #1 & Module #2.

Module 3: ARTICLE 110: GENERAL REQUIREMENTS FOR ELECTRICAL SAFETY RELATED WORK PRACTICES

- Trainees will be taken through the eleven sections of Article 110 for a look at the requirements for energize work, normal operating conditions, an electrical safety program. Safe work requires qualified persons to perform a risk assessment, read and interpret labels, establish boundaries and follow other safe work practices identified in NFPA 70E training requirements.
- The students will learn to use these steps as they interact with the NTT Risk Assessment APP. to develop a Job Safety Analysis (JSA) for typical electrical task. This JSA will be used throughout the remainder of the class for hands-on activities.



Risk Assessment and JSA (Job Safety Assessment Form) documentation (NTT APP)

Perform a risk assessment, in groups of two they will be assigned typical electrical task in the form of work orders. These scenarios will be used throughout the remainder of the course.



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COURSE AGENDA (CONT)

Module 4: ARTICLE 120: ESTABLISHING AN ELECTRICALLY SAFE WORK CONDITION

- OSHA and 70E requirements in Article 120 are first presented. Trainees then perform an electrical Lockout/Tagout on electrical equipment from their assign task. The exercise applies information from the JSA developed previously, and PPE selection based on previous exercises.
- Skills are developed as the 8-step method is used to establish and verify a circuit is electrically safe. The correct process for installing personal protective grounds are covered
- The instructor demonstrates proper body positioning and techniques for typical switching operations



Using the scenarios, they were given, the students will then identify the isolation steps to place their equipment into Electrically Safe Work Condition, using the NTT APP and JSA.

Module 5: ARTICLE 130: WORK INVOLVING ELECTRICAL HAZARDS

- NFPA 70E requires electrical equipment to meet five requirements prior to Normal Operation. After discussing those requirements, trainees will perform a visual inspection of the NTT electrical equipment for installation and maintenance issues. Examples of good and bad installations are discussed. Trainees will use the table in the NFPA 70E Standard to determine the likelihood of the occurrence of an arc flash. Learn how to use a risk matrix to determine severity of risk.

- The students will learn shock risk assessment, and arc flash risk assessment using both the incident energy method and PPE category methods.



Students will be given examples of arc flash labels and must answer the questions on the protection boundaries and PPE needed for the task.



The second part of the exercise they would be given task & equipment without an arc flash label and must determine the protection boundaries and PPE needed using the PPE category method.

Module 6: ARTICLE 130.7: ELECTRICAL PERSONAL PROTECTIVE EQUIPMENT

- In addition to discussing characteristics and maintenance of various types of PPE, trainees will use the checklist in their text/APP. to inspect PPE. Trainees are encouraged to bring their own PPE to class for inspection. The instructor will demonstrate proper glove inspections, with donning and doffing techniques of assorted PPE.

Using the NTT APP, students will go through a 3D simulation exercise.



Student Selects and Inspects PPE (clothing, tools) for the task they were assigned.



In the second exercise, the student groups practice PPE identification by the application of the PPE Category Method from NFPA 70E 130.7(C)(15)



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COURSE AGENDA (CONT)

Module 7: CONDUCTING AN EMERGENCY RESPONSE DRILL

- While the risk assessment and proper safe work practices are all designed to keep workers safe, unintentional injuries do occur. NFPA 70E requires training in emergency response, methods of release, CPR and AEDs. In this exercise trainees must develop an emergency response plan. Trainees then implement the plan following the scenario given by the instructor. The class concludes with a video exercise to summarize the electrical safe work practices learned.

Students will go into Canvas and answer question on the material covered in the module

Completion

- This course closes with a review of State, Local, and Company Policy requirements and discusses how NFPA 70E interacts with them so workers understand and can appropriately apply safe work practices in their workplace.
- Q/A, review of material and general safety issues.



Final Exam: Performance demonstration via 3D interactive simulation.



Final Exam: Knowledge assessment

HANDS-ON DEMO EQUIPMENT

Client Must Provide – Student Use

PERSONAL PROTECTION EQUIPMENT (PPE)

- Everyday Electrical PPE Work Clothing that is worn by the attendees: Typically this is PPE Category 2 Arc-rated pants and shirt, or coveralls, hardhat, safety glasses and leather work shoes or boots.
- Arc-rated face shield and balaclava.
- Voltage-rated rubber gloves, leather protectors. Class 0, or 00 are typical. Any voltage rating will be fine.
- Arc-flash suit and hood (typically rated at 40 cal/cm² or more), and arc-rated gloves
- Hearing protection: ear canal inserts

EQUIPMENT

- One insulated tool, (screwdriver, side cutters, nut driver, etc.)
- Digital Multimeter (DMM)

NTT Will Provide – Demonstration Only

PERSONAL PROTECTION EQUIPMENT (PPE)

- Coveralls - PPE Cat 2
- Face Shield (Arc rated)
- Balaclava
- Rubber Gloves (Arc rated)
- Leather Gloves
- Safety Glasses (ANSI Z87 approved)

EQUIPMENT

- Insulated screwdriver
- Digital Multimeter (DMM)



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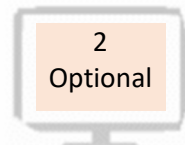


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EQUIPMENT & MATERIALS

CLIENT PROVIDED COMPUTER REQUIREMENTS (Live Online Training only)

- Student email address to receive access to NTT's online platform
- Internet Access through a computer (laptop or desktop)
 - 1:1 Participant minimum bandwidth requirements: 1.2 Mbps (download)
- Ability to download and view files online
- Two monitors recommended but only one required
- Computer Speakers
- Computer Microphone
- Computer Web Camera (REQUIRED)
- Browser Requirements are:
 - Chrome 78, 79, 80
 - Edge 44 (Windows only)
 - Edge 79
 - Firefox 71 and 72 (Extended Releases are not supported)
 - Safari 12 and 13 (Macintosh only)



OR



NTT PROVIDED STUDENT MATERIALS

- Access to NTT's online platforms:
 - Canvas for digital exercises
 - Zoom for web video conference
 - No purchase or install necessary but students will be required to test the system they will be taking the class on before the day of training.
- Student Materials
 - Hard-Copy of Texts & Industry Standards, NTT Job Aids and general consumables: notepad, pens/highlighters, tabs
 - Digital-copies of NTT materials

