

# Electrical /Electronic Maintenance 1

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## Description

This course is designed to train new hires, update skilled craftsmen and cross-train personnel for servicing industrial, electrical and electronic equipment. This course provides training in electrical safety and safe work methods, National Electrical Code, basic electrical calculations, and

electrical/electronic test equipment. The course may also be used for personnel who need a basic understanding of electronic and electrical fundamentals, as well as for non-industrial electricians (e.g. a building and construction trades background). This course may be customized.

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## Outline

- Electrical Safety, Safe Work Methods, Lockout-Tag Out Procedures
  - Fusing
  - Electrical Shock
  - Hand Tool Safe Practices
  - Power Tools
  - Grounding for Safety
  - Safety Color Codes
  - Clothing and Personal Protective Equipment
  - Fire Safety
  - Hazardous Locations
  - Out of Service Protection
- How to Use the National Electrical Code
  - Background of the Code
  - Importance of the Code
  - Structure of the NEC Book
  - Explanation of the Chapters
  - Wire Size and Types
  - Insulation Types and Purposes
  - Conduit Installation
  - Fusing
  - Motor Circuits
  - Lighting Circuits
- Fundamental Concepts of Electricity, Including; Voltage, Grounding, AC Voltages and Wiring Methods
  - Current, Ohms, Volts
  - Measurement of Current, Resistance, and Volts
  - Conductor Materials, Wire Measurement, AWG
  - Series Circuits
  - Parallel Circuits
- Use of Electrical Tools and Measurement Devices, such as; Cutting Tools, Wire Stripping Equipment, Multimeters, Meggers, Amp-Meters and many others
  - Correct Tool Usage
  - Screwdrivers, Wrenches, Pipe Vises
  - Hole Cutting
  - Fire Extinguishers
- Calculations: Ohms Law, Power, Voltage Drop, Resistance, and Transformer Windings
  - Measurement of Power and Energy
  - Line Losses
  - Single Phase Electrical Service
  - Three Phase Electrical Service
  - Transformer Operation

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## **Prerequisites**

There are no prerequisites for this course except a willingness to learn and a desire to participate in an instructor led, "hands-on" course.

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## **Course Length**

32 hours/ Up to 12 participants.

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## **Performance Objectives**

At the completion of this course the participant will have developed an understanding of electrical safety, safe work methods and lockout-tag procedures. They will learn how to use the National Electrical Code manual. The participant will understand the fundamental concepts of electricity, including: voltage, grounding, AC voltages and wiring methods. They will learn the use of electrical tools and measuring devices, such as: cutting tools, wire stripping equipment, multimeters, meggers, amp-meters and many others. The participant will also learn to calculate: Ohm's law, power, voltage drop, resistance, transformer windings.