2020 Bonding and Grounding Online Course 

# Provider Information

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| Provider | Instructor | Email |
| Mike Holt Enterprises | Mike Holt | ceuonline@mikeholt.com |

# General Information

## Course Description

This course is based on the content from Mike Holt’s Understanding NEC Requirements for Bonding and Grounding textbook. This program identifies areas of the code covered in Articles 90, 110, and 250 that specifically address Grounding and Bonding.

## Expectations and Goals

The format of the course is designed to encourage constant interaction with the student. Each course is set-up to provide students with a page of text or video presentation followed by a question that they must answer as they go through the material. This provides immediate application of the content learned. This format keeps students actively engaged in their learning through the entirety of the course.

In addition, all students give feedback on courses through surveys and we are able to continue to enhance the program based on this consistent feedback.

## Student Interaction

Our online course provides the student with the ability to send questions about the course and content to Mike Holt and our CEU department 24 hours a day through our “Submit a Question” and “Report an Error” section. During normal business hours (8:30am to 5:00pm EST) all calls are answered by customer service and questions that are emailed to the department are always responded to and resolved within 2 hours during normal business hours. Questions that are emailed while the office is closed are addressed within 6-8 hours.

# Course Materials

## Required Materials

Students are required to have a computer and reliable internet connection to properly use our online courses. Our courses are optimized to perform on Firefox or Google Chrome.

Students are not required to purchase any additional training materials, such as textbooks.

# Methods of Presentation

**Text**

The course utilizes text and full-color illustrations to help you visualize the change and safety requirements in practical use. You will review author’s comments & analysis, cautions regarding possible conflict or confusing NEC requirements, tips on proper electrical installations, and warnings of dangers related to improper electrical installations.

**Quiz Questions**

Student comprehension is tested immediately with page or video level questions. They must pass these quizzes with a 75% or better to receive credit for this course.

# Course Security

**Affidavits**

Students will be required to electronically sign the following affidavit when taking this online course:

*Beginning of the course:*

I hereby certify that I am the person completing the following course (Name of Course) and that I will complete this course completely on my own. By entering my name below, I am ensuring I am the student who is enrolled in and completing this course

*At the end of the course:*

I hereby certify that I have completed all questions and exams in the following course (Name of Course). I have completed this on my own without any help from others. By entering my name below, I am agreeing that all information is accurate.

**Course Timer**

Our courses track all student progress and has a built-in timer. The timer will be set with 400 minutes, which requires the student to have at least 8 hours of activity at 50 minutes per credit hour. Students will not be able to receive credit unless they have met the minimum time requirement for this course. Students can track their time remaining by viewing the course timer while they are logged into the course.

**Student Computer**

Students will not be allowed to be logged into multiple computers at once while completing our courses. Students will only be able to log into one computer to successfully take the course.

**Inactivity Timer**

 Students with automatically be logged out of the course after 30 minutes of inactivity.

**Facial Recognition**

Students will be required to take a secured photo to validate their identity at the beginning of course, each time they log into the course, randomly throughout the course, and final at the end of the course. This photo will be stored on their account and it validated through the software API with each additional photo. Photo will be compared through the system to verify it is the student earning credit for the course.

# Course Topics

| Module | Topics | Estimated Time Spent | Presentation |
| --- | --- | --- | --- |
| Introduction to the National Electric Code | Article 90 – Introduction to the National Electrical Code |  25 minutes | Text |
| Chapter 1- General Rules | Article 110 – Requirements for Electrical Installations |  15 minutes | Text |
| Chapter 2- Wiring and Protection Part 1- General |

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| Article 250.1 – Scope |
| Article 250.4 – Performance Requirements for Grounding and Bonding |
| Article 250.6 – Objectionable Current |
| Article 250.8 – Connection of Grounding and Bonding Connectors |
| Article 250.10 – Protection of Ground Clamps and Fittings |
| Article 250.12 – Clean Surfaces |

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 | Text |
| Chapter 2- Wiring and Protection Part 2- System Grounding and Bonding |

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| Article 250.20 – Systems Required to be Grounded |
| Article 250.21 – Ungrounded Systems |
| Article 250.24 – Grounding |
| Article 250.25 – Grounding for Supply Side of the Service Disconnect |
| Article 250.28 – Main Bonding Jumper and System Bonding Jumper |
| Article 250.30 – Separately Derived Systems |
| Article 250.32 – Buildings Supplied by a Feeder |
| Article 250.34 – Generators—Portable and Vehicle- or Trailer-Mounted |
| Article 250.36 – High-Impedance Grounded Systems |

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| Chapter 2- Wiring and Protection Part 3- Grounding Electrode System and Grounding Electrode Conductor |

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| Article 250.50 – Grounding Electrode System |
| Article 250.52 – Grounding Electrode Types |
| Article 250.53 – Grounding Electrode Installation Requirements |
| Article 250.54 – Auxiliary Grounding Electrodes |
| Article 250.58 – Common Grounding Electrode |
| Article 250.62 – Grounding Electrode Conductor |
| Article 250.64 – Grounding Electrode Conductor Installation |
| Article 250.66 – Sizing Grounding Electrode Conductor |
| Article 250.68 – Grounding Electrode Conductor and Bonding Jumper Connection to Grounding Electrodes |
| Article 250.70 – Grounding Electrode Conductor Termination Fittings |

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| Chapter 2- Wiring and Protection Part 4- Enclosure, Raceway, and Service Cable Connections |

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| Article 250.80 – Service Raceways and Enclosures |
| Article 250.86 – Other Enclosures |

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| Chapter 2- Wiring and ProtectionPart 5- Bonding for Fault Current |

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| Article 250.90 – General |
| Article 250.92 – Bonding Equipment Containing Service Conductors |
| Article 250.94 – Bonding Communications Systems |
| Article 250.96 – Bonding Other Enclosures |
| Article 250.97 – Bonding Metal Parts Containing 277V and 480V Circuits |
| Article 250.98 – Bonding Loosely Jointed Metal Raceways |
| Article 250.102 – Neutral Conductor, Bonding Conductors, and Bonding Jumpers |
| Article 250.104 – Bonding of Piping Systems and Exposed Structural Metal |
| Article 250.106 – Lightning Protection Systems |

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| Chapter 2- Wiring and ProtectionPart 6- Equipment Grounding and Equipment Grounding Conductors |

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| Article 250.109 – Metal Enclosures |
| Article 250.114 – Equipment Connected by Cord and Plug |
| Article 250.118 – Types of Equipment Grounding Conductors |
| Article 250.119 – Identification of Equipment Grounding Conductors |
| Article 250.120 – Equipment Grounding Conductor Installation |
| Article 250.121 – Restricted Use of Equipment Grounding Conductors |
| Article 250.122 – Sizing Equipment Grounding Conductors |

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| Chapter 2- Wiring and ProtectionPart 7- Methods of Equipment Grounding Conductor Connections |

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| Article 250.134 – Equipment Connected by Permanent Wiring Methods |
| Article 250.136 – Equipment Secured to Grounded Metal Supports |
| Article 250.138 – Cord-and-Plug-Connected |
| Article 250.140 – Frames of Ranges, Ovens, and Clothes Dryers |
| Article 250.142 – Neutral Conductor for Effective Ground-Fault Current Path |
| Article 250.146 – Connecting Receptacle Grounding Terminal to an Equipment Grounding Conductor |
| Article 250.148 – Continuity and Attachment of Equipment Grounding Conductors in Boxes |

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