

Title: 2023 16-Hour Code Related

Credit Hours: 16

12 hours of Code Change; 4 hours of NFPA 70E

#### Course Description:

This comprehensive 16-hour course is designed to provide electricians, electrical contractors, and other industry professionals with a thorough understanding of the 2023 National Electrical Code (NEC) updates, including specific topics of NFPA 70E.

Over the course of 12 hours, participants will delve into the significant changes, revisions, and additions introduced in the 2023 NEC. Through a combination of Videos, illustrations, content, and practical examples, participants will explore the updated code requirements and gain the knowledge necessary to apply them accurately in their electrical installations.

The 2023 NEC update portion of the course will cover a wide range of topics, including but not limited to:

#### General Overview of the 2023 NEC

Key revisions and changes in the code

New and updated definitions

Updates related to branch circuits and feeders

Requirements for grounding and bonding systems

Enhanced safety provisions for electrical installations

Changes in equipment and wiring standards

Updates in residential, commercial, and industrial applications

Furthermore, the course will dedicate 4 hours specifically to NFPA 70E related to the 2021 Version. Participants will explore various topics to expand their knowledge regarding the safety practices related to electrical work.

#### NEC Code Update (2023) - 12 Hours

1. 90.4 - Enforcement: Describes the enforcement of the National Electrical Code.
2. 100 - Closet Storage Space: Defines closed closet storage space in the context of Article 410.
3. 100 - Energy Management System: Defines what an energy management system is.
4. 100 - Corrosive Environment: Specifies the meaning of a corrosive environment.

5. 100 - Ground Fault: Defines what constitutes a ground fault.
6. 100 - Likely to Become Energized: Explains the phrase "likely to become energized".
7. 100 - Power-supply Cord: Offers a definition for a power-supply cord.
8. 100 - Short Circuit: Provides the definition for a short circuit.
9. 110.3(B) - Installation and Use: Lays out rules for the installation and use of electrical equipment.
10. 110.14(A) - Electrical Connections (Terminals): Details how electrical connections should be made at terminals.
11. 110.21(A)(1) - Equipment Markings (General): Describes general requirements for equipment markings.
12. 110.21(B)(1) - Markings – Field Applied Hazard Marking: Outlines specifications for field-applied hazard markings.
13. 210.1 - Scope: Defines the scope of the chapter or section it heads.
14. 210.8 - Ground-Fault Circuit-Interrupter Protection for Personnel: Discusses the need for ground-fault circuit-interrupter protection for personnel.
15. 210.8(B)(7) - GFCI Protection for Personnel (Sinks): Specifies the requirements for GFCI protection near sinks.
16. 210.12(B) - Dwelling Units: Discusses specific regulations for dwelling units.
17. 210.11(C)(4) - Garage Branch Circuit and Exception #2: Details the regulations for garage branch circuits and the second exception.
18. 210.52(C) - Island and Peninsular Countertops and Work Surfaces: Discusses regulations for electrical installations on island and peninsular countertops and work surfaces.
19. 250.50, 250.52(A)(3)(1), 250.52(B)(2) - Discuss the use of rebar in place of reinforcing steel or rods.
20. 250.68 - Grounding Electrode Conductor and Bonding Jumper Connection to Grounding Electrodes: Describes the specifications for grounding electrode conductor and bonding jumper connections to grounding electrodes.
21. 250.118 - Types of Equipment, Grounding, Conductors: Details the types of equipment and grounding conductors.
22. 300.10 - Electrical Continuity of Metal Raceways, Cable Armor, and Enclosures: Covers the need for electrical continuity of metal raceways, cable armor, and enclosures.
23. 300.25 - Exit Enclosures (Stair Towers): Discusses the regulations for exit enclosures or stair towers.
24. Article 305 - Discusses general requirements for wiring methods and materials for systems rated over 1000 V, AC, 1500 V DC, nominal.
25. 314.5 - Screws or Other Fasteners: Details the use of screws or other fasteners in electrical installations.

26. 314.17 - Conductors and Cables, Entering Boxes, Conduit, Bodies, or Fittings: Describes regulations for conductors and cables entering boxes, conduit, bodies, or fittings.
27. 314.29 - Boxes, Conduit Bodies, and Handhole Enclosures
28. 330.10 - Uses Permitted List Item 11: Details one specific permissible use within the larger context of the article.
29. 334.15(B) - Exposed Work (Protection from Physical Damage): Discusses how to protect exposed work from physical damage.
30. 342.20(B) - Intermediate Metal Conduit: Provides specifications for the installation of intermediate metal conduit.
31. 358.10 - Uses Permitted: Lists the conditions under which certain methods or materials can be used.
32. Article 369 - Insulated Bus Pipe (IBP)/Tubular Covered Conductors (TCC) Systems: Covers the guidelines and regulations for IBP/TCC systems.
33. 371.14 - Installation Design: Details requirements for the design of installations.
34. 406.3(A) - Receptacles Ratings and Types: Defines ratings and types for receptacles.
35. 406.9 - Receptacles in Damp and Wet Locations: Describes the rules for the use of receptacles in damp and wet locations.
36. 408.43 - Panel Board Orientation: Discusses the orientation of panel boards.
37. 410.44 - Connection to the Equipment Grounding Conductor: Provides guidelines for connecting to the equipment grounding conductor.
38. Article 410, Part XVII: This portion of the code deals with a specific subset of electrical guidelines.
39. 430.2 - Reconditioned Motors: Covers the specifications for reconditioned motors.
40. 440.8 - Single Machine and Location: Details guidelines for the installation of a single machine in a given location.
41. 500.8 - Equipment: Outlines specifications for equipment.
42. 512.32 - Marking: Explains the marking requirements for specific equipment or installations.
43. 517.22 - Demand Factors (Healthcare Facilities): Provides the demand factors that apply to healthcare facilities.
44. 551.77(D) - Mounting Height: Details specifications for the mounting height of certain equipment.
45. 555.36(C) - Emergency Electrical Disconnect: Covers the requirements for emergency electrical disconnects.
46. 625.6 - Listed (Electric Vehicle Power Transfer): Discusses the listing requirements for electric vehicle power transfer systems.
47. 625.49 - Island Mode (Electric Vehicles): Defines the "island mode" in the context of electric vehicle charging systems.

48. 680.9(A) - Power (Swimming Pools): Provides the power requirements for swimming pools.
49. 680.12 - Equipment Rooms, Vaults, and Pits: Details guidelines for electrical equipment in vaults and pits associated with swimming pools.
50. 810.3 - Other Articles: Refers to other articles that may be relevant to a specific chapter or section of the code.
51. 90.1 - Scope: The scope of the National Electrical Code, its purpose, and organization.
52. 90.2 - Use and Application: Understanding the appropriate use and application of the NEC code.
53. 100 - Scope (Code-wide changes): An overview of the code-wide changes made in the NEC code, with a focus on the removal of xx.2 section.
54. 100 - Accessible (Applied to Wiring Methods): The requirements for accessible wiring methods, including the identification of equipment, clearance requirements, and protection of conductors.
55. 100 - Bonding Jumper, Main: Knowledge of the main bonding jumper and its significance.
56. 100 - Commissioning: The commissioning process for electrical equipment, including the requirements for testing, inspection, and documentation.
57. 100 - Counter: Understanding the application and requirements for countertop installations.
58. 100 - Energized, Likely to Become: Identifying electrical components that are likely to become energized.
59. 100 - In Sight From: The requirements for electrical equipment to be in sight from the operating location, including the definition of "within sight."
60. 100 - Premises Wiring (System): Knowledge of premises wiring systems and their regulations.
61. 100 - Servicing: The requirements for servicing electrical equipment, including the identification of equipment, clearance requirements, and protection of conductors.
62. 100 - Service-Entrance Conductors: Understanding the requirements for service-entrance conductors.
63. 100 - Stand-Alone System: Comprehending the concept and application of stand-alone systems.
64. 110.8 - Wiring Methods: Understanding the proper wiring methods according to NEC guidelines.
65. 110.12 - Mechanical Execution of Work: The requirements for the proper installation and mechanical execution of electrical work.
66. 110.16(B) - Service Equipment and Feeder Supplied Equipment: Knowledge of regulations for service equipment and feeder supplied equipment.

67. 110.17 - Servicing and Maintenance of Equipment: The requirements for the servicing and maintenance of electrical equipment.
68. 110.20 - Reconditioned Equipment: The requirements for the use of reconditioned electrical equipment.
69. 110.21(A)(2) - Markings - Reconditioned Equipment: Comprehending the marking requirements for reconditioned equipment.
70. 110.22(A) - Identification of Disconnecting Means (General): Understanding the importance of identifying disconnecting means.
71. 110.26 - Space About Electrical Equipment: The requirements for the space around electrical equipment to ensure proper access and safety.
72. 110.29 - Insight From (Within Sight From, Within Sight): The requirements for electrical equipment to be within sight from the operating location.
73. 200.6 - Means of Identifying Grounded Conductors: The requirements for identifying grounded conductors.
74. 210.2 - Reconditioned Equipment: Knowledge of the regulations and considerations for reconditioned equipment in electrical installations.
75. 210.4 - Multiwire Branch Circuits: The requirements for the installation of multiwire branch circuits.
76. 210.8 (A)Ex. No.4 dwelling unit bathroom, Ex. No. 4 exhaust fan receptacles.
77. 210.8(A)(7) - Dwelling Unit (Areas with Sinks): The requirements for the installation of outlets in areas with sinks in dwelling units.
78. 210.8(D) Specific Appliances
79. 210.8(F) - Outdoor Outlets (for Dwelling Units): The requirements for the installation of outdoor outlets in dwelling units.
80. 210.12(C) - Arc-Fault Circuit Interrupter Protection (Dormitory Units): Understanding the requirements for arc-fault circuit interrupter protection in dormitory units.
81. 210.17 - Guest Rooms and Guest Suites: The requirements for the installation of electrical outlets in guest rooms and guest suites.
82. 210.19 - Conductors-Minimum Ampacity and Size: The requirements for the minimum ampacity and size of conductors.
83. 210.23(A) - 10-Ampere Branch Circuits: Comprehending the regulations for 10-ampere branch circuits.
84. 215.15 - Barriers (Feeders): Knowledge of barrier requirements in feeders.
85. 215.18 - Surge Protection: The requirements for surge protection in electrical systems.
86. 220.5(C) - Floor Areas: Understanding the regulations for floor areas in electrical installations.
87. 220.57 - Electric Vehicle Supply Equipment (EVSE) Load: The requirements for the load calculations of electric vehicle supply equipment.

88. 220.60 - Non-coincidental Loads: Comprehending the considerations for non-coincidental loads.
89. 225.27 - Raceway Seal: The requirements for sealing raceways to prevent moisture ingress.
90. 225.41 - Emergency Disconnects: Knowledge of the requirements for emergency disconnects.
91. 225.42 - Surge Protection: Understanding the regulations and considerations for surge protection.
92. 230.67(A) - Surge-Protective Devices: Comprehending the requirements for surge-protective devices.
93. 230.71(B) - Two to Six Service Disconnecting Means: The requirements for service disconnecting means in electrical systems.
94. Article 235 - Branch Circuits, Feeders, and Services over 1000 V AC, 1500 V DC, Nominal: Understanding the regulations for higher voltage systems.
95. 240.6(A) - Fuses and Fixed-Trip Circuit Breakers: The requirements for the installation of fuses and fixed-trip circuit breakers.
96. 240.7 - Listing Requirements: The listing requirements for electrical equipment.
97. 240.16 - Interrupting Ratings: Knowledge of interrupting ratings for overcurrent protective devices.
98. 240.24(E) - Not Located in Bathrooms: Understanding the regulations for overcurrent protective devices not located in bathrooms.
99. 242.9 - Indicating: The requirements for indicating electrical equipment.
100. 250.64(G) - Enclosures with Ventilation Openings: The requirements for enclosures with ventilation openings.
101. 250.102(C)(2) - Size for Parallel Conductor Installations in Two or More Raceways or Cables.
102. 250.130 - Equipment Grounding Conductor Connections: Comprehending the requirements for equipment grounding conductor connections.
103. 250.148 - Continuity of Equipment Grounding Conductors and Attachment in Boxes: The requirements for ensuring continuity of equipment grounding conductors and attachment in boxes.
104. 300.11(C) - Raceways Used as a Means of Support: Understanding the use of raceways as a support mechanism.
105. 300.12 - Mechanical Continuity: Comprehending the requirements for mechanical continuity in electrical installations.
106. 300.14 - Length of Free Conductors at Outlets, Junctions, and Switch Points: Knowledge of the regulations for the length of free conductors at various points.

107. 312.10 - Screws or Other Fasteners: The requirements for the use of screws or other fasteners in electrical installations.
108. 314.17(A) - Openings to Be Closed: The requirements for closing openings in electrical installations.
109. 314.25 - Covers and Canopies: Understanding the requirements for covers and canopies in electrical installations.
110. 314.25(A) - Nonmetallic or Metal Covers and Plates: Comprehending the requirements for nonmetallic or metal covers and plates.
111. 320.23(A) - Cables Run Across the Top of Framing Members: The requirements for cable installations across framing members.
112. 314.7(B)(2) - Cables Entering Through Cable Clamps: The requirements for cables entering through cable clamps.
113. 314.24 - Dimensions of Boxes: The requirements for the dimensions of boxes in electrical installations.
114. 334.10 - Uses Permitted: The permitted uses for nonmetallic-sheathed cable in electrical installations.
115. 334.19 - Cable Entries: Understanding the regulations for cable entries in nonmetallic-sheathed cable installations.
116. 344.28 - Reaming and Threading: Comprehending the requirements for reaming and threading conduits.
117. 334.40 - Boxes and Fittings: The requirements for boxes and fittings in nonmetallic-sheathed cable installations.
118. 356.10 - Uses Permitted: The permitted uses for liquidtight flexible metal conduit in electrical installations.
119. 358.20(B) - The Maximum Size of EMT: The maximum size of electrical metallic tubing that can be used in electrical installations.
120. Article 371 - Flexible Bus Systems: Understanding the requirements for flexible bus systems.
121. Article 369 - Insulated Bus Pipes/Tubular Covered Conductors: The requirements for insulated bus pipes and tubular covered conductors.
122. 404.1 - Scope: Understanding the scope and coverage of electrical systems as per NEC guidelines.
123. 404.14(F) - Dimmer and Electronic Control Switches: The requirements for dimmer and electronic control switches.
124. 404.16 - Reconditioned Equipment: The requirements for the use of reconditioned equipment in electrical installations.
125. 406.3(C) - Receptacle Rating and Type - Receptacles: Comprehending the regulations for receptacle ratings and types.

126. 406.4(D)(3) - Ground-Fault Circuit-Interrupter Protection: The requirements for ground-fault circuit-interrupter protection in specific locations.
127. 406.12 - Tamper-Resistant Receptacles: The requirements for tamper-resistant receptacles in electrical installations.
128. 408.9 - Replacement Panel Boards: The requirements for the replacement of panel boards in electrical installations.
129. 410.184 - Ground-Fault Circuit-Interrupter (GFCI) Protection and Special Purpose Ground-Fault Circuit-Interrupter (SPGFCI) Protection: Knowledge of the requirements for GFCI and SPGFCI protection.
130. 422.16(B)(2) - Dishwashers and Trash Compactors: The requirements for the installation of dishwashers and trash compactors in electrical systems.
131. 430.2 - Recondition Motors: Comprehending the regulations and considerations for reconditioned motors.
132. 450.1 - Scope: Understanding the scope and coverage of electrical systems as per NEC guidelines.
133. 501.10(A)(1) - General (In Class I, Division 1 Locations): The requirements for electrical equipment in Class I, Division 1 locations.
134. Article 512 - Cannabis Oil Equipment and Cannabis Oil Systems Using Flammable Material: Knowledge of regulations specific to cannabis oil equipment and systems.
135. 517.20(A) - Wet Procedure Locations (Receptacles and Fixed Equipment): The requirements for receptacles and fixed equipment in wet procedure locations.
136. 547.26 - Physical Protection (Agricultural Buildings): Comprehending the requirements for physical protection in agricultural buildings.
137. 547.44 - Equal Potential Planes and Bonding of Equal Potential Planes (Agricultural): The requirements for equal potential planes and bonding of equal potential planes in agricultural electrical systems.
138. 550.32(A) - Service Equipment (Mobile Homes): Understanding the regulations for service equipment in mobile homes.
139. 555.35(D) - Leakage Current Measurement Device: Knowledge of the regulations for leakage current measurement devices.
140. 555.14 - Equal Potential Planes and Bonding of Equal Potential Planes (Marinas): The requirements for equal potential planes and bonding of equal potential planes in marina electrical systems.
141. 600.5(A) - Time Clocks in Similar Devices: Comprehending the regulations for time clocks and similar devices.
142. 625.44(A) - Portable Equipment: The requirements for portable equipment in electrical systems.



143. 630.8 - GFCI Protection for Personnel (Electric Welders): Understanding the requirements for GFCI protection in electric welder installations.
144. 680.5 - GFCI and SPGFCI Protection: The requirements for ground-fault circuit-interrupter and swimming pool ground-fault circuit-interrupter protection in electrical systems.
145. 680.21(D) - Pool Pump Motor Replacement: Comprehending the regulations for pool pump motor replacements.
146. 690.4(G) - PV Equipment Floating on Bodies of Water: The requirements for photovoltaic equipment floating on bodies of water in electrical systems.
147. 690.41 - PV System DC Circuit Grounding and Protection: The requirements for grounding and protection in photovoltaic systems.
148. 700.3(F) - Temporary Source of Power List Item (Four): Knowledge of the regulations and considerations for temporary power sources.
149. 700.8 - Surge Protection: Understanding the requirements for surge protection in electrical installations.
150. 840.160 - Powering Circuits: The requirements for powering circuits in fire alarm systems.

#### NFPA70E 4-Hours

1. 90.2(A) Scope...Covered
2. 90.2(B) Scope...Not Covered
3. 90.4 Mandatory/Permissive Rules
4. Definitions...Arc Flash Hazard
5. Definitions...Arc Rating
6. Definitions...Boundary, Arc Flash
7. Definitions...Boundary, Limited Approach
8. Definitions...Boundary, Restricted Approach
9. Definitions...Electrical Safety Program
10. Definitions...Electrically Safe Work Condition
11. Definitions...Available Fault Current
12. Definitions...Incident Energy/Analysis
13. Definition...Risk Assessment
14. Definition...Step/Touch Potential
15. Definition...Qualified/Unqualified Person
16. Definition...Working On (energized elec. Parts)
17. 105.3 Responsibility/Employer/Employee
18. 110.3 Electrically Safe Work Condition
19. 110.4 Energized Work/ Additional Hazards

20. 110.4 Energized Work/ Infeasibility
21. 110.4 Energized Work/ Less than 50 Volts
22. 110.4(D) Normal Operating Conditions
23. 110.5 Electrical Safety Program/ Awareness...
24. 110.5(H) Risk Assessment Procedure/Elements/Human Error
25. 110.5(H) Risk Assessment/ Hierarchy of Risk Control Methods
26. 110.5(I) Job Safety Planning/Briefing/Change in Scope
27. 110.5(M) Auditing
28. 110.6(A) Electrical Safety Training/ Qualified Person
29. 110.6(A) Electrical Safety Training/ Unqualified Person
30. 110.6(A) Electrical Safety Training/ Additional & Retraining
31. 110.6(B) LOTO Training/ Retraining
32. 110.6(C) Emergency Response Training
33. 110.8 Test Instruments & Equipment
34. 110.9 Portable Cord- and-Plug-Connected Electrical Equipment
35. 110.10 Groun-Fault Circuit-Interrupter (GFCI) Protection.
36. 120.1 LOTO Program
37. 120.2 LOTO Principles
38. 120.3 LOTO Equipment
39. 120.4(A) LOTO Procedures/ Planning
40. 120.4(B) LOTO Procedures/ Elements of Control
41. 120.4(B) LOTO Procedures/ Elements of Control
42. 120.5 Process for Establishing/Verifying Elec. Safe Work Condition
43. 130.1 Work Involving Electrical Hazards...General
44. 130.2 Energized Electrical Work Permit
45. 130.2(C) EEWB/Exemptions
46. 130.4 Shock Risk Assessment
47. 130.4(E&F) Shock Protection Boundaries/Limited Approach
48. 130.4(G) Restricted Approach Boundary
49. 130.5 Arc Flash Assessment
50. Table 130.5(C) Estimate of Likelihood of Occurrence of Arc Flash
51. 130.5(G) & Table 130.5(G) Incident Energy Analysis Method
52. 130.5(H) Equipment Labeling
53. 130.7(C) Personal Protective Equipment (PPE)
54. 130.7(C)(11-13) PPE, mat. Characteristics, not-permitted, Care & Main.

- 55. 130.7(C)(15) & Table 130.7(C)(15(a) Arc Flash PPE Category Method
- 56. Table 130.7(C)(15)(c) Personal Protective Equipment (PPE)
- 57. 130.7(D)(1) Insulated Tools and Equipment.
- 58. 130.7(D)(2) Barriers
- 59. 130.7(E) Alerting Techniques
  
- 60. 130.8 Other Precautions for Personnel Activities