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2020 NEC Code Changes – 12 CE Hours

Course Syllabus & Outline

Course Details:
CEU Credits: 12
Contact Hours: 12
Course Type: Code Update
Required Textbook: 2020 NEC Code Book recommended but not required
Class Format/Location: Web-based course delivered on-line @ go.bluevolt.com
Prerequisite: Current or reciprocal state electrical license
Instructor: Palmer Hickman

Course Description:
Continuing education training on the current National Electrical Code helps electrical license holders work safely and keep their licenses up to date. This course covers all changes to the 2020 NEC, NFPA 70. Specific articles are listed in the course outline below.

Course Learning Objectives:
1. Introduce students to changes in the 2020 NEC Code
2. Provide students with a code change summary, type of change, the new 2020 code, significance of change with corresponding visual aid.

Student Learning Outcomes:
At the conclusion of this course, each student will be able to:

- Find code sections in the 2020 NEC that have been changed
- Explain why certain 2020 NEC changes were made
- Apply the 2020 NEC changes to workplace situations
- Identify applications and implement 2020 NEC Changes

Evaluation/Grading: Participants will have the opportunity to receive feedback on their progress in meeting the student learning outcomes by answering questions with each corresponding code change slide. Each chapter will require the learner score a 70% or higher in order to pass. There is also a comprehensive Final Exam that requires a 75% in order to pass. This Final Exam can be made required when necessary.

Control Time & Security: BlueVolt times each student's active participation in a course and enforces the module seat times (shown on the syllabus) via a timer. After 10 minutes of inactivity, the seat time clock stops and the learner is logged out. If learners complete the material before the seat time requirement is met, they may use review modules to revisit material as needed. For security, learner accounts are password protected. Learners must confirm their identity each time they log into the course.

Chapter 1: Significant Changes

Articles 90, 100, and 110 Introduction, Definitions, and Requirements for Electrical Installations
45 MINUTES

*90.2(A)(5) & (6)
Expanded Scope Electric Vehicles and Marinas

*Article 100
Article 100 Scope (.2)

*Article 100
Article 100 Scope (Parts I, II, and III)

*Article 100
Definition of Accessible (as applied to equipment)

*Article 100
Definition of Habitable Room

*Article 100
Definition of Photovoltaic (PV) System

*Article 100
Definition of Receptacle – New Informational Note

*Article 100
Definition of Reconditioned

*Article 100
Definition of Service Equipment

*Article 100
Definition of Stand-Alone System

*110.3(B)
Installation and Use

*110.12(C)
Cables and Conductors – Workmanship

*110.14(D)
Terminal Connection Torque

*110.21(A)(2)
Reconditioned Equipment Exception

*110.22(A)
Disconnect Marking

*110.24(A)
Published Values of Available Fault Current

*110.26(A)
Planning for an Electrically Safe Work Condition

*110.26(C)(2)
Sum of Service Disconnect Ratings Added

*110.32
Work Space About Equipment

Chapter 1: Remaining Changes

45 MINUTES

- Article 100
Definition of Bonding Jumper, Supply-Side

-Article 100
Definition of DC-to-DC Converter

-Article 100
Definition of Equipotential Plane

Article 100
-Definition of Fault Current and Available Fault Current

-Article 100
Definition of Interactive Inverter

-Article 100
Definition of Inverter

-Article 100
Definition of Labeled – New Informational Note

-Article 100
Definition of Laundry Area

-Article 100

Definition of Messenger or Messenger Wire

-Article 100

Definition of Prime Mover

-Article 100

Definition of Electrical Resistance Trace Heating

-Article 100

Definition of Inherently Safe Optical Radiation

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-Article 100

Definition of Optical Radiation

-Article 100

Definition of Protected Optical Fiber Cable

-Article 100

Definition of Protected Optical Fiber Radiation

-110.26(C)(3)

Listed Fire Exit Hardware

-110.28

Dusttight Enclosure Use and Application

-110.31(A)(4)

Listed Panic and Fire Exit Hardware

Chapter 2: Significant Changes

Articles 210–250
Wiring and Protection
90 MINUTES

*200.3

Connection to Grounded System

*210.5(C)(1)

Identification of Ungrounded Conductors

*210.8(A)

GFCI, Dwelling Units

*210.8(D), (E), & (F)

GFCI Protection for Personnel

*210.11(C)(3) & (C)(4)

Bathroom and Garage Branch Circuits

*210.19(A)(1)

Conductors, Minimum Ampacity and Size

*210.63

Equipment Requiring Servicing

*Table 220.12

General Lighting Loads by Non-Dwelling Occupancy

*220.87

Determining Existing Loads

*225.30(A)

Special Conditions (Number of Supplies)

*225.30(B)

Common Supply Equipment

*230.62(C)

Barriers

*230.71

Maximum Number of Disconnects, Two to Six

*230.85

Emergency Disconnects

*240.62, 240.88, & 240.102

Reconditioned Equipment

*240.67(C) & 240.87(C)

Performance Testing

*Article 242

Overvoltage Protection

*250.25

Grounding on Supply Side of Disconnect

*250.68(C)(3)

Grounding Electrode Conductor Connections

*250.119(B)

Multiconductor Cable Reidentified

*250.121(B)

Metal Frame of Building or Structure

*250.122

Size of Equipment Grounding Conductors

Chapter 2: Remaining Changes

90 MINUTES

-200.10(B)

Identification of Grounded Conductor Terminals

-210.8

GFCI Protection for Personnel

-210.8(B)

GFCI, Other Than Dwelling Units

-210.12(A)

AFCI Protection, Dwelling Units

-210.12(C)

…Sleeping Rooms, Nursing, Limited-Care Facilities

-210.12(D)

BC Extensions/Modifications, Guest Rooms/Suites

-210.25(B)

Common Area Branch Circuits

-210.52(C)

Receptacle Outlets, Countertops and Work Surfaces

-210.52(E) & (G)

Outdoor Outlets and Basements, Garages,

-210.65

Meeting Rooms

-210.70

Lighting Outlets Required

-215.10

Ground Fault Protection of Equipment

-220.11, 220.12(A) & (B)

Floor Area, Lighting Load Non-Dwelling Occupancies

-220.14(J), (K), & (M)

Dwelling Units, Office Buildings, Hotels, and Motels

-220.42

General Lighting

-225.10, 230.43, & 230.44

Wiring on Buildings (or Other Structures)

-225.15

Supports Over Buildings

-225.19

Overhead Spans Open/Multiconductor Cable

-230.46

Spliced and Tapped Conductors

-230.67

Surge Protection, Dwelling Units

-230.75

Disconnection of Grounded Conductor

-230.82 (1), (3), (5), & (6)

Equipment…Supply Side of Service Disconnect

-230.82 (10) & (11)

Equipment…Supply Side of Service Disconnect

-240.6(C)

Restricted Access Adjustable-Trip Circuit Breakers

-240.21(B)

Feeder Taps

-240.67

Arc Energy Reduction

-240.87

Arc Energy Reduction

-250.2

Definition of Bonding Jumper, Supply-Side

-250.20(B) & 250.36 Informational Note

Informational Note References *NFPA 70E*

-250.28

Main Bonding Jumper and System Bonding Jumper

-250.30

Grounding Separately Derived AC Systems

-250.34(A) & (B)

Trailer-Mounted Generators

-250.64(A)

Aluminum and Copper-Clad Aluminum Conductors

-250.64(B)(2) & (B)(3)

Securing and Protection Against Physical Damage

-250.64(E)(1) & (E)(3)

Raceways and Enclosures for GECs

-250.92(B)

Method of Bonding at the Service

-250.98

Bonding Loosely Joined Metal Raceways

-250.104(A)(B)(C)(D)

Bonding of Piping Systems and Exposed Structural Metal

-250.134

Connections to an Equipment Grounding Conductor

-250.136

Equipment Secured to Grounded Metal Supports

-250.142

Line- and Load-Side Equipment Grounding

-250.146

Receptacle Grounding Connections to Grounded Boxes

-250.148

Continuity of EGCs and Attachment in Metal Boxes

-250.184(A)(1) & (C) Exception

Multipoint Grounded Neutral Systems

Chapter 3: Significant Changes

Articles 300–396
Wiring Methods and Materials
20 MINUTES

*300.25

Exit Enclosures (Stair Towers)

*310.15(B) & (C)

Ambient Temperature Correction/Adjustment Factors

*Article 311

Article 311 Medium Voltage Conductors and Cable

*314.16

Number of Conductors...Box Volume/Fill

*Article 337

Type P Cable

*392.30(B) & 392.44

Securing/Supporting and Expansion Splice Plates

Chapter 3: Remaining Changes

30 MINUTES

-300.3(B)(1)

Conductors, Paralleled Installations

-300.4(G)

Protection Against Physical Damage, Fittings

-310.1 & 310.3

Article Scope and Conductors

-310.12

Single-Phase Dwelling Services and Feeders

-310.14 & 310.15

Ampacity Tables

-312.8(B)

Power Monitoring or Energy Management Equipment

-314.17

Conductors Entering Boxes, Conduit Bodies, or Fittings

-314.27

Boxes at Ceiling-Suspended (Paddle) Fan Outlets

-320.80(A), 330.80(C), & 338.10(B)(4)

Ampacity

-330.130

Hazardous (Classified) Locations

-330.104 & 336.104

Conductors

-334.30

Securing and Supporting

-336.10

Type TC Cable, Uses Permitted

-336.130

Hazardous (Classified) Location Cable

-338.2 & 338.100

Service Entrance Conductor Assembly

-342.10(E), 344.10(E), & 358.10(E)

Physical Damage and Severe Physical Damage

-342.14, 344.14, & 358.14

Dissimilar Metals

-392.46

Bushed Conduit and Tubing, Flanged Connections

Chapter 4: Significant Changes

Articles 400–490

Equipment for General Use

45 MINUTES

*404.14

Rating and Use of Switches

*408.3 & 408.18(C)

Connections, Switchboards, and Switchgear

*408.4(A) & 408.6

Short-Circuit Current Rating and Directories

*408.8

Reconditioning of Equipment

*410.7

Reconditioned Equipment, Luminaires

*422.5

GFCI Protection for Personnel

*440.9

Grounding and Bonding

*445.6

Listing of Generators

*450.9

Ventilation

*480.7(B)

Emergency Disconnect, Batteries

*480.7(G)

Identification of Power Sources

*490.49

Reconditioned Switchgear

Chapter 4: Remaining Changes

30 MINUTES

-400.12

Uses Not Permitted

-406.4(D)

Receptacle Replacements

-406.5(G) & 406.9(C)

Receptacle Orientation and Location

-406.13

Single-Pole Separable-Connector Type Receptacles

-408.43

Panelboard Orientation

-410.36(A)

Luminaires Supported by Outlet Boxes

-410.69

Identification of Control Conductor Insulation

-410.116(C)

Installation in Fire-Resistant Construction

-410.118

Access to Other Boxes

-410.170

Special Provisions for Horticultural Lighting Equipment

-422.22

Utilizing Separable Attachment Fittings

-430.2, 430.32(A) & (B)

Electronically Protected Motors

-430.122

Conductors, Minimum Size and Ampacity

-430.130(A)

C, SC, GF Protection Power Conversion Equipment

-445.18

Emergency Shutdown in 1 and 2 Family Dwelling Units

-460.2 & 460.25(D)

Safe Zone, Protective Devices Rated or Adjusted

-480.1 & 480.2

Storage Batteries

-480.7(F)

Notification, DC Disconnect Methods

-490.21(A)(5) & 490.21(E)

Retrofit Trip Units and Load Interrupters

-490.35(B)

Accessibility of Energized Parts, Control Equipment

Chapter 5: Significant Changes

Articles 500–590

Special Occupancies

45 MINUTES

*Hazardous Locations Articles .3

Sections

Remove the Term "Class I" from Zones 0, 1, and 2

*501.10(A)(1) (6)(7)

New Wiring Methods

*502.10(A)(1) (6)(7)

Type TC-ER-HL and Type P Cables Added

*503.10(A)(1) Items (2)(3)(4)

Equipment Grounding Conductor Plus Drain Wire

*506.8(K)(L)(M)

Optical Radiation

*Article 517

Categories, Type of Patient Care in Parenthesis

*517.16

Use of Isolated Grounding Receptacles

*517.17(A) & (D)

Ground-Fault Protection of Equipment (GFPE)

*517.18(A)

General Care Spaces – Exception No. 4

*517.18(C)

Risk Assessment for Tamper Resistant Receptacles

*517.29

Type 1 Essential Electrical Systems

*517.31(C)(3) (3)(f)

Mechanical Protection of the Essential Electrical System

*517.44(B)

Delayed Automatic/Manual Connection Equipment Branch

*518.6

Illumination

*Article 545, Part II

Article 545, Part II Relocatable Structures

*551.72(E) & 551.72(F)

Connected Devices, Connection to RV Site Equipment

*Articles 553 & 555

Floating Building Requirements Relocated

*555.35(A)

GFPE and GFCI Protection

*555.35(B)

GFPE and GFCI Protection

*555.53

Ground-Fault Protection, Floating Buildings

*590.8

Overcurrent Protective Devices

Chapter 5: Remaining Changes

70 MINUTES

-Hazardous Locations Articles .2

Sections

Relocation of Hazardous (Classified) Locations

-500.5(C)(1) (3)

Normal and Abnormal Operation

-500.7(K)(1) through (4)

Combustible Gas Detection System

-500.7(L)(M)(N)

Optical Radiation

-500.8(G)

Equipment Involving Optical Radiation

-501.10(B)(1) (3)(4)(5)(6)

Equipment Grounding Conductor Plus Drain Wire

-501.10(B)(1) (9)

Type “P” Cable

-502.10(A)(2) (7)(8)

Type TC-ER-HL and Type P Cables Added

-502.10(B)(1) Items (4)(5)(6)(7) & New (10)

Equipment Grounding Conductor and Type “P” Cable

-502.150(B)(5)

Connection Through Attachment Plug and Receptacle

-505.8(J)

Protection by Electrical Resistance Trace Heating

-506.9(G)

Equipment Involving Optical Radiation

-506.15(C)(5)(6)(7)

Equipment Grounding Conductor Plus Drain Wire

-511.12 & 513.12

GFCI Required in Accordance with 210.8(B)

-514.11

Emergency Electrical Disconnects

-517.2 Definitions

Dental Office and Medical Office

-517.10(B)(3)

Not Covered Part II Requirements

-517.21

GFCI Not Used on Life Support Equipment

-517.30(B)

Types of Power Sources

-517.35(C) & 517.43

Relocation of 517.35(C) to 517.43(G)

-525.20(G) & 525.23(A)

Wiring Method Protection and GFCI Protection

-545.1 & 545.2

Manufactured Buildings and Relocatable Structures

-547.5(G) & 550.13(B)

GFCI Protection of Receptacles

-551.40(D)

Reverse Polarity Device

-551.71(A) & 551.71(F)

GFCI Protection and Tamper Resistant Receptacles

-555.2

Definitions

-555.3, 555.4, & 555.5

Datum Plane, Service Equipment, Maximum Voltage

-555.7 & 555.9

Transformers and Boat Hoists

-555.30

Electrical Connections

-555.33(B) & (C) & 555.34

GFCI Protection, Outdoor Feeders, and BCs

-590.4(G)

Splices, New Exception for Construction Sites

-590.6(B)

Assured Equipment Grounding Conductor Program

Chapter 6: Significant Changes

Articles 600–695
Special Equipment
70 MINUTES

*600.5
Branch Circuits

*620.65 & 620.62
Signage (Selectively Coordinated OCPDs)

*625.1
Electric Vehicle Power Transfer System

*625.54 & 625.56
GFCI Protection and Receptacle Enclosures

*680.3 & 680.4
Approval of Equipment, Inspections After Installation

*680.21(C) & 680.21(D)
GFCI Protection/Replacement of Pool Pump Motors

*680.22(A)(4) & 680.22(A)(5)
GFCI Protection, Pool Equipment Room Receptacles

*680.22(C) & 680.22(E)
Switching Devices, Other Equipment

*680.35
Storable and Portable Immersion Pools

*682.15
Ground-Fault Protection

*690.12
Rapid Shutdown of PV on Buildings

*690.15
Disconnecting Means for Isolating PV Equipment

*690.31(D) & (F)
DC Circuits on or in Buildings, Mounting Systems

*690.56(C)
Buildings with Rapid Shutdown

*694.22(C)
Emergency Disconnect, 1 & 2 Family Dwellings

*695.10, 700.5(C), 701.5(C), 702.5(A), & 708.24(A)
Fire Pump Controllers and Transfer Switches

*695.14(F)
Generator Control Wiring Methods

Chapter 6: Remaining Changes

75 MINUTES

-600.2
Host Sign, Retrofit Kit (2 types), Subassembly

-600.6(A)(4)
Disconnect in Remote Location

-600.35
Retrofit Kits

-625.2
625.2 Definitions

-625.17
Cords and Cables

-625.42
Power Transfer Equipment Rating

-625.60
AC Receptacle Outlets Used for EVPE

-645.5(E)
Cables Installed Under Raised Floors

-680.2

Definition of Corrosive Environment

-680.2

Definition of Fountain, Immersion Pool,

-680.11

Underground Wiring

-680.26(B)

Equipotential Bonding, Bonded Parts

-680.45

Permanently Installed Immersion Pools

-680.53 & 680.54

Grounding and Bonding

-680.59

GFCI, Permanently Installed Nonsubmersible Pumps .....

-680.80, 680.82, & 680.84

Electrically Powered Pool Lifts

-682.4

Industrial Application

-682.5

Electrical Datum Plane Distances

-682.33(C)

Bonding Equipotential Planes

-690.2 & 690.6

AC Modules and Systems

-690.2

Definition of Array

-690.2, 690.4(F), & 690.8(A)(2)

Electronic Power Converters

-690.2

Source and Output Circuits

-690.9

Overcurrent Protection of Circuits and Equipment

-690.13

Photovoltaic System Disconnecting Means

-690.31(A) & (B)

Wiring Systems, Identification and Grouping

-690.31(C)

Cables

-690.41

System Grounding, Ground-Fault Protection

-690.53

DC PV Circuits, Marking

-695.3(B) & 695.3(C)

Multiple Sources, Multibuilding Campus Complexes

-695.6

Services, Terminations

Chapter 7-8: Significant Changes

Articles 700–770
Special Equipment
Articles 800–840
Communications Systems
45 MINUTES

*700.5, 701.5, & 702.5

Transfer Equipment

*700.10(D)

Fire Protection

*702.7

Signs, Emergency Shutdown

*705.12

Load-Side Source Connections

*705.20

Disconnecting Means, Source

*706.3, 706.7, & 706.8

Qualified Personnel, Maintenance, Storage Batteries

*708.24(D)

Bypass Isolation Automatic Transfer Switches

*710.10 & 710.12

Identification of Power Sources, Inverter Input

*712.2 & 712.10

Functionally Grounded, Directory

*725.2 & 725.3

Cable Bundle, Temperature Limitations, EGCs

*Article 800

General Requirements for Communications Systems .....

*805.179(D) & 805.179(G)

Communications Wire and Cables

Chapter 7-8: Remaining Changes

20 MINUTES

-700.4 & 701.4

Capacity and Rating

-700.12

Sources of Power, General Requirements

-700.16

Emergency Illumination

-700.23 & 700.24

Dimmer/Relay Systems, Directly Controlled Luminaires

-700.32, 701.32, & 708.54

Selective Coordination

-705.13

Power Control Systems (PCS)

-705.25, 705.28, & 705.30

Wiring Methods, Circuit Sizing and Current

-706.15

Disconnecting Means

-710.1 & 710.6

Scope and Equipment Approval

-725.144

Transmission of Power and Data

-840.94 & 840.102

Premises Circuits Leaving the Building