2501 SW First Ave., Suite 400
Portland, Oregon 97201

Office: (888) 321 - BLUE (2583)
Fax: (503) 296 - 5326

2020 NEC Code Changes – Part 2 – 8 CE Hours

Course Syllabus & Outline

Course Details:
CEU Credits: 8
Contact Hours: 8
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 changes to the 2020 NEC, NFPA 70, that are not covered in our Part 1 "Significant Changes" course. Specific articles are listed in the course outline below.

Course Learning Objectives:
1. *Introduce students to the significant 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
Articles 90, 100, and 110
Introduction, Definitions, and Requirements for Electrical Installations
60 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 "op is"

-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
Articles 210–250
Wiring and Protection
120 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 109

Chapter 3
Articles 300–396
Wiring Methods and Materials
45 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
Articles 400–490
Equipment for General Use
45 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
Articles 500–590
Special Occupancies
90 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
Articles 600–695
Special Equipment
90 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 241

-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
Articles 700–770
Special Equipment
Articles 800–840
Communications Systems
30 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

Palmer Hickman
Director of Code & Safety Curriculum and Training
Electrical Training Alliance
301 Prince Georges Blvd., Suite D
Upper Marlboro, MD 20774-7401
(301) 715-2378
phickman@electricaltrainingalliance.org

Palmer Hickman is the Director of Code & Safety Curriculum and Training for the Electrical Training Alliance in Washington, DC. The Electrical Training Alliance is the training arm of the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA).

He also has served as a Director of Codes and Standards for the IBEW. In this capacity, he has represented the IBEW on the National Electrical Code (NEC) Technical Correlating Committee (TCC), Code Panels 1 and 20 of the NEC®, and on the Technical Committees for NFPA 70E®, *Standard for Electrical Safety in the Workplace*, and NFPA 70B®, *Recommended Practice for Electrical Equipment Maintenance*. In addition to his Codes and Standards responsibilities, he is an OSHA Construction Industry Master Instructor as well as an OSHA authorized Outreach Trainer for both Construction and General Industry. He is 20+ year member of the IBEW with additional memberships including IAEI, NFPA, IEEE, NETA, and the UL Electrical Council. In addition to completion of the IBEW/NECA/NJATC apprenticeship, his educational background includes a B.A. in Labor Safety and Health.

For BlueVolt, Mr. Hickman is the instructor of 2020 NEC Code Change courses.

CERTIFICATE of COMPLETION

is hereby granted to

[[StudentName]]

to certify that they have completed to satisfaction on

[[CompletionDate]]

COURSE: [[CourseName]]	COURSE SPONSOR: BlueVolt
INSTRUCTOR: [[CourseInstructor]]	LOCATION: Online/Internet
CREDIT HOURS: [[CreditHours]]	
STATE APPROVAL NUMBERS: [[CourseCode]]	
LICENSE NUMBER(S): [[ElectricalLicense]]	

Julia Griffiths
Course Sponsor

BlueVolt
2501 SW First Avenue, Suite 400
Portland, Oregon 97201
(503) 223-2583
go.bluevolt.com