2020 Code Change III (chapter 1-9) 4 Hours

# Course Description

## The following course is designed around chapter 1-9 of the 2020 NEC. New definitions will be covered, but the majority of the course will be covering additions and revisions of the 2020 NEC

## Info – The author of this course has added extra info that will be available for each topic covered, the info will expand on what the change was from the 2017 NEC to the 2020 NEC. In addition, the author has also provided some illustrations to help provide better understanding of selected topics.

## This course was designed to give a better understanding to the end user on what/why happened from 2017 to 2020 of the NEC. Even though this course does not cover every change that happened it does focus on the major one.

# Glossary of Key Terms

### Charge Controller – Equipment that controls dc voltage or dc current, or both, and that is used to charge a battery or other energy storage device.

### Combustible Dust – Dust particles that are 500 microns or smaller and present, a fire or explosion when dispersed and ignited in air.

### DC-to-DC Converter – A device installed in the PV source circuit or PV output circuit that can provide an output dc voltage and current at a higher or lower value than the input dc voltage and current.

### Effective Ground-Fault Current Path – An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current under ground-fault conditions from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors.

### Innerduct – A nonmetallic raceway placed within a larger raceway.

### NEC – National Electrical Code

### NFPA – National Fire Protection Association

### Retrofit Kit – A general term for a complete subassembly of parts and devises for field conversion of utilization equipment.

### Patient Care Space – Space within a healthcare facility wherein patients are intended to be examined or treated.

### Stage Lighting Hoist – A motorized lifting device that contains a mounting position for one or more luminaires, with wiring devices for connection of luminaires to branch circuits, and integral flexible cables to allow the luminaire to travel over the lifting range of the hoist while energized.

### Switchgear – An assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) and containing primary, power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors, removable covers, or both.

#  Learning Objectives

### The user shall be able to define the key terms used in this course

### Define Electrical Datum Plan

### Define Equipotential Plane

### Define Ground-Fault Circuit Interrupt her (GFCI)

### Define Fault Current

### Recognize the AFCI requirements in a dormitory unit

### Understand recondition equipment

### Explain 110.26(2)(3) personal doors

### Understand110.26(D)(2) outdoor

###  Understand Locks for Part III Over 1000 Nominal

###  Recognize grounded conductors of multi conductor cables

###  Explain outdoor outlets

###  Understand bathroom branch circuits

###  Describe 210.12(A) Dwelling Units List #(5)

###  Understand reconditioned equipment

###  Explain 210.50 receptacle outlets

###  Explain receptacle outlet location

###  Discuss balconies, decks, and porches

###  Explain receptacle outlets required

### State where to find receptacle outlets and fixed walls

## Identify floor outlets

## Understand 220.16(A) Dwelling Units

## Understand 220.53 Appliance load-dwelling unit(s)

## Understand electric cooking appliances in dwelling units and household cooking appliances used in instructional programs

1. Understand kitchen equipment-other than dwelling unit(s)

## Explain Number of service-entrance conductor sets / exception No 1

## Understand 230.42(A) General

## Identification emergency disconnects

## Explain underground conductor

##  Explain restricted access adjustable-trip circuit breakers

##  Understand Feeder Taps

##  Explain reconditioned equipment

##  Understand method to reduce clearing time

##  Identify portable, vehicle-mounted, and trailer-mounted generators

## Explain portable generators

## Explain vehicle-mounted and trailer-mounted generators

## Understand bonding for communication systems

## Explain purpose of bonding loosely jointed metal raceways

## Understand 250.104(A)(1) General

##  Explain building or structures supplied by a feeder(s) or branch circuit

## Understand Nonferrous wiring methods

## Identify exit enclosures (stair towers)

## Explain dry and damp locations

## Understand wet locations

##  Explain 314.17(A) and (B) conductors entering boxes, conduit bodies, or fittings

## 314.27(C) boxes at ceiling-suspended (paddle) fan outlets

## Explain Ampacity

## Identify Article 337 type P cable

## Understand 338.2 definitions

## Understand the installation methods for branch circuits in theaters

## Understand 358.15 Dissimilar Metals

## Explain 380.12 Uses Not Permitted

## Identify Equipment Grounding Conductor

## Identify Electronic Control Switches

## Explain 406.3(A) Receptacles

##  Identify Isolated Ground Receptacles

##  Identify Non-Grounding-Type Receptacles

##  Understand Arc-Fault Circuit-Interrupter Protection

##  Explain Conductors and Busbars on a Switchboard, Switchgear, or Panelboard

##  Explain Bus Arrangement

##  Where to Find Reconditioning of Equipment

##  Listing of Power Distribution Blocks in Service Equipment

##  Luminaire(s) with Exposed Conductive Parts

##  Identification of Control Conductor Insulation

## Understand 422.5(A) General

##  Uses permitted for flexible cords and cables

##  Explain 422.10 Branch Circuits

##  Understand 430.2 Controller

##  Understand Available Fault Current

##  Identify Markings

##  Explain Phase Converter

## Understand 480.4(D) Accessibility

## Emergency Electrical Disconnections

## Low-Voltage Lighting Systems

## Equipment Grounding Conductor for Receptacles and Fixed Equipment in Patient Care Spaces

## Patient Bed Location Branch Circuits

## Understand 518.2 General Classifications

## Portable Luminaires

## Explain 550.32(E)Additional Receptacles

## Understand 551.1 Scope

##  Ground-Fault Protection of Equipment (GFPE) and Ground-Fault-Interrupter (GFCI) Protection

##  Explain 600.35 Retrofit Kits

##  Knowledge of 625.17(A) Power-Supply Cord

##  Knowledge of Fountains

##  Approval of Equipment

##  Bonding and Equipment Grounding Terminals

##  Understand Pool Pump Motor Replacement

##  Storable and Portable Pumps

##  Understand Electrical Datum Plane Distances

##  Calculation of Maximum Circuit Current

##  Photovoltaic System Disconnecting Means, Location

## Explain 692.6 Listing Requirements

## Understand 700.12 General Requirements

## Explain 725.2 Cable Bundle

1. Knowledge Exposed (to Accidental Contact)

##  Temperature Limitations of Wiring and Cables

## Separation from Lightning Conductors

## In Buildings or Structures with an Intersystem Building Termination

## Understand 840.2 Premises-Powered

## Informative Annex D – Examples – D7 Sizing of Service Conductors Dwelling(s)

# Author (SME)

## The following course was written by Mr. Byron Cropp of Oregon. Mr. Cropp apprenticed back in the field in the early nineties and has held several positions with different electrical companies before opening is own electrical contracting company in 2001. In 2008 Mr. Cropp shut down his business to become an electrical consultant for a national electrical company where he was asked to secure a master electrician license in Washington and a supervisor license in Oregon. During his spare time he has also written a code class for a third party educational company on NEC code changes.