2020 Code Change I (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

### Accessible (as applied to equipment) – Capable of being reached for operation, renewal, and inspection.

### Bathroom– in areas including a sink (basin) with one or more of the following: a toilet, a urinal, a tub, shower, a big day, or similar plumbing fixtures.

### Bonding Jumper Supply-Side – A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected.

### Habitable Room – a room in a building for a living, sleeping, eating, or cooking, but excluding bathrooms, toilet rooms, and closets, hallways, storage or utility spaces, and similar areas.

### Inverter – Equipment that changes DC to AC

### 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.

### Dwelling Units – A single unit, providing complete in independent living facilities for one or more persons, including permanent provisions for a living, sleeping, cooking, and sanitation

### Qualified Person – One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

#  Learning Objectives

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

### Explain what is Covered and not Covered in the NEC

### Understand why definitions are put into Article 100

### State the differences between all the accessible definitions

### Understand what qualifies as a bathroom

### Determines where a bonding jumper supply-side is installed

### Understand what a habitable room is

### Understands what inverter does

### Can explain what a ground-fault current path is

###  The requirements for equipment to be listed labeled or both

###  Define mechanical execution of work when pertaining cables and conductors

###  Determine when to label service equipment.

###  Identified what the silver termination represents on a receptacle

###  Describe when and how to identify different voltage systems on same premises

###  Understand ground-fault circuit-interrupter protection for personnel

###  Understand when ground-fault circuit0interrupter protection for personnel is required in a dwelling unit

###  Understand when ground-fault circuit-interrupter protection for personnel is required for other than dwelling units

###  Explain when a GFCI is required in other than dwelling unit kitchen or areas similar to kitchens

###  Explain when arc-fault circuit-interrupter protection is required in guest rooms, guest suites, and patient sleeping rooms in nursing homes and limited-care facilities

### Define the capacity capability of a feeder

## Identifying when ground-fault circuit-interrupter protection for personnel on feeders shall be permitted

## Explain when ground-fault protection of equipment for a feeder is required

## Recognize the changes to table 220.12

## Understand the notes of table 220.42

## Explain what a noncoincident load is

## Understand clearances from buildings for conductors not over 1000 V

## Understand the number for supplies (feeders) to a building

## Explain what a common supply equipment is when pertaining to feeders

## Identify locations for the disconnecting means of feeders

##  Understand the purpose of barriers in service equipment

## Understand the requirements for markings of service equipment rated 1000 volts or less

##  Define when search-protective devices are installed for dwelling units

##  Explain when ground-fault protection of equipment is required

##  Understand what reconditioned equipment is

## Understand new article 242 overvoltage protection

## Identify when grounding-systems are permitted to be connected on the supply side of the disconnect

## Identify the connection of bonding jumpers

## Understand when a supplemental electrode is required

##  Understand the codes when using aluminum or copper clad aluminum conductors as grounding electrode conductor’s

## Able to explain when grounding electrode conductor’s are exposed to physical damage

## Understand when metal enclosures are permitted to be used to connect bonding jumper’s or equipment grounding conductor’s or both

## Understand paralleled conductors’ installation

## Able to explain when what fittings are required with raceways containing conductors 4 AWG or larger

##  Explain when raceways need to be sealed regarding raceways exposed to different temperatures

## Understand that article 310 covers general requirements for conductors rated up to and including 2000 V

## Able to read and understand table 310.12

## Able to find and read table 310.16

## Identify what a nonmetallic-sheathed cable is cable is

## Explain the listing requirements for tape NM and tape in NMC cables

## Uses not permitted for tapes NM and NMC cables

## Understand the construction of service-entrance cable’s type SE and USE

## Understand severe physical damage for intermediate metal conduit

## Explain dissimilar metals when pertaining to stainless steel and aluminum and galvanize steel

## Explain expansion splice plates

##  Understand uses not permitted for flexible cords and flexible cables

##  Understand the scope of article 404

##  Identify switch in habitable rooms

##  Explain the indicating required on a general use a motor-circuit switch

##  Able to explain the requirements of controlled receptacles

##  Identify code violations for countertop and work surface receptacles

##  Understand the requirements of placement for receptacles under the sink

##  Understand markings by the manufacturer for sections of equipment that requires rear or side access to make field connections

##  Explain overcurrent protection for panelboards

## Understand the definition of clothes closet storage space

##  Able explain the types of luminaires permitted in clothes closets

##  Understand the requirements for equipment grounding conductor attachment of luminaires

##  Understand the installation of illuminators in fire resistant construction

##  Able to identify when appliances are required to be listed

##  Identify the location for disconnecting means of thermostatically controlled switching devices

##  Identify the grounding and bonding requirements in metallic raceways using compression-type fittings supplying equipment outdoors on rooftop

## Able to explain requirements for disconnecting means for generators other than cord-and-plug-connected portable generators

## Able to explain no storage on transformers duty ventilation

## Understand the definition of storage battery

## Identify where the emergency disconnect (Storage Batteries) shall be located for one-family and two family-dwelling’s

## Understand what disconnection of series battery circuits is

## Identify use of isolated ground receptacles in healthcare facilities

## Able to explain testing of ground-fault protection of equipment in healthcare facilities

## Able to identify where to find conductor ampacity for control systems for permanent amusement attractions

## Explain ground-fault circuit-interrupter protection for receptacles in agricultural buildings

##  Understand what is not covered by the NEC for recreational vehicles and recreational vehicle parts

##  Able to explain what a reverse polarity device is

##  Be aware of overcurrent protection devices for temporary installation

## Identify the markings on retrofitted illumination system

##  Article 605 Covered and Not Covered

##  Able to define electric vehicle connector

##  Able to define immersion pool

##  Understands wiring methods in corrosive environments

##  Able to define functionally grounded

##  Able to explain the routing for fire pump feeders

##  Identify power systems

## Understand the listing requirements for transfer equipment

## Able to explain signs required on standby equipment

## Understand requirements for metal entrance conduit grounding

## Knowledge of where to look for codes on abandoned cables

##  Knowledge of mechanical execution of work

## Able to define point of entrance

## Knowledge of overhead Ariel for a coaxial cable

## Review for chapter 9 notes to table note 2

## Review of informative Annex A - product safety standards

## Review of informative Annex - D examples D8 motor

# Author (SME)

## The following course was written by Mr. Byron Cropp of North Carolina. 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 written numerous code courses for Lightwave Learning, LLC.