



National Electrical Code Update Course Description and Outline

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Course Description:

This six-hour course meets the Utah requirement for licensed electrician's continuing education credits. This course covers the most significant 2011 NEC Code changes, Electrical Safety, and new technology. The course covers wiring and protecting, wiring methods and materials, equipment for general use, special occupancies, special equipment, special conditions, communication systems, tables, examples and annexes, and NEPA 70 E electrical safety.

Course Objectives:

Participants will:

- Review code sections in the 2011 NEC that have been changed
- Explain why certain 2011 NEC changes were made
- Apply the 2011 NEC changes to workplace situations
- Identify applications and implement 2011 NEC Changes
- Review electrical safety, the NEC and OSHA

Length:

16 hours

Attendance:

Students are required to be in attendance for the entire class length—16 hours. Students not attending the entire time will be issued a certificate indicating only the number of hours in attendance.

Course Evaluation

At the conclusion of this course, your instructor will distribute a course evaluation. Please complete the evaluation and return it to your instructor.

Policies

The College has policies in place that cover such things as non-discrimination, equal opportunity, disciplinary actions, student conduct, grievances, and ADA requests. Inquire at Students Services for any of these services.

Books & Materials:

- **NFPA 70** NEC 2011, (required student text)
- Changes to the NEC 2011, (optional student text)

- Understanding codes related to OSHA (optional – Instructor training resource)
- NFPA 70 E Electrical safety
- Changes to the NEC 2011 DVD's (optional – Instructor training resource)

Class Outline:

Introduction 1 hour

The course introduction will review the purpose of the NEC code updates focusing on the implementations as outlined in:

- Annex g
- Article 90
- Chapter 1 and general wiring

Wiring & Protection 3 hours

Students will learn how to apply the new NEC information focusing on principles in wiring & protection as outlined in:

- Article 200 – Use & Identification of Grounded Conductor
- Article 210 – Branch Circuits
- Article 215 – Feeders
- Article 220 – Branch-Circuit, Feeder & Service Calculations
- Article 225 – Outside Branch Circuits & Feeders
- Article 230 – Services
- Article 240 – Overcurrent Protection
- Article 250 – Grounding & Bonding

Wiring Methods & Materials 1-1/2 hours

In this section students will review code changes that may affect how, or if, they may continue current installation practices. Students will also review the logic behind the changes focusing on:

- Article 300 – Wiring Methods
- Article 310 – Conductors for General Wiring
- Article 314 - Outlet, Device, Pull & Junction Boxes, Conduit Bodies & Handhold Enclosures
- Article 320 – Armored Cable: Type AC
- Article 330 – Metal-Clad Cable: Type MC
- Article 334 – Nonmetallic-sheathed Cable: Types NM & NMC
- Article 348 – Flexible Metal Conduit: Type FMC
- Article 350 – Liquidtight Flexible Metal Conduit: Type LFMC
- Article 376 – Metal Wireways
- Article 380 – Multioutlet Assemblies
- Article 386 – Surface Metal Raceways
- Article 388 – Surface Nonmetallic Raceways
- Article 399 – Outdoor Overhead Conductors over 600 volts

Equipment for General Use

1-1/2 hours

Students will build on and apply knowledge for general equipment use focusing on:

- Article 400 – Flexible Cords
- Article 404 – Switches
- Article 406 – Receptacles Cord Connectors, & Attachment Plugs
- Article 408 – Switchboards & Panelboards
- Article 410 – Luminaries, Lampholders & Lamps
- Article 411 – Lighting Systems Operating at 30 Volts or Less
- Article 422 – Appliances
- Article 424 – Fixed Electric Space-Heating Equipment
- Article 430 – Motors, Motor Circuits, & Controllers
- Article 445 – Generators
- Harmonics and Code Change Effects
- Article 480—Storage Batteries
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Special Occupancies

1-1/2 hours

Special occupancies related to physical facility, or use of the physical facility, will be explained. A detailed comparison of the English vs. the Metric systems of measurement will be discussed examining major differences and hazards in:

- Article 500 – Hazardous Locations, Classes I, II & III, Divisions 1 & 2
- Article 501 – Class I Locations
- Article 514 – Motor Fuel Dispensing Facilities
- Article 517 – Health Care Facilities
- Article 520 – Theaters, etc
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- Article 525 – Carnivals, Circuses, Fairs & Similar Events
- Article 550 – 353 Recreational Vehicles & Recreational Vehicle Parks etc.
- Article 555 – Marinas & Boatyards
- Article 590 – Temporary Installations

Special Equipment

1-1/2 hours

Students will be able to identify equipment that, by nature of its use, construction or unique nature, creates a need for additional measures to ensure the safeguarding of people and property. The following NEC articles will be used:

- Article 600—Electric signs and Outline lighting
- Article 625 – Electric Vehicle Charging System
- Article 640 –Information Technology
- Article 680 – Swimming Pools, Spas, Hot Tubs, Fountains & Similar Installation
- Article 682 – Natural & Artificially Made Bodies of Water
- Article 690—Solar Systems

- Article 692—Fuel Cells
- Article 694—Small Wind Electric Systems
- Article 695 – Fire Pumps

Special Conditions **1 hour**

Students will discuss how to deal with situations that fall under the category of Special Occupancies or Special Equipment, but create a need of additional measures with a focus on:

- Article 700 – Emergency Power Systems
- Article 701 – Legally Required Standby Power Systems
- Article 702 – Optional Standby Systems
- Article 705—Interconnected Electric Power
- Article 708—Critical Operations Power Systems
- Article 725 – Class 1, Class 2 & Class 3 Remote-Control, Signaling & Power-Limited Circuits
- Article 760 - Fire Alarm Systems
- Article 770 – Optical Fiber Cables & Raceways

Communication Systems **1/2 hour**

Students will review the wiring requirements for communications systems such as telephones, radio and TV antennas, satellite dishes, closed-circuit television and cable TV systems. Network-powered broadband communications systems, not under the exclusive control of the communications utility, will also be discussed using:

- Article 800 – Communications Circuits
- Article 810 – Radio & Television Equipment
- Article 820 – Community Antenna Television & Radio Distribution Systems
- Article 830 – Network-Powered Broadband Communications Systems
- Article 840—Premises-Powered Broadband Communications Systems

Tables, Examples & Annexes **1/2 hour**

Detailed information and changes will be discussed with the students utilizing information from:

- NEC Code Book Chapter 9
- Annexes
- Legal adoption by jurisdictions – former Article 80
- Forensic engineering and the NEC effects

NFPA 70 E Electrical Safety **3hours**

Course Review Test **1 hour**

To assess student knowledge, students will be given a final review examination.