

NEC2014 Electrical Theory and Calculations

Electrical Theory and Calculations is designed to meet the 8-hour Professional Development Units (PDU) requirements for Continuing Competency for electrical licenses in Colorado as well as 8 hours of Continuing Education Units (CEUs) for many other states. The course curriculum covers Ohm's Law and voltage drop, general lighting and receptacle calculations, range and dryer calculations, fixed appliance calculations, sizing grounding conductors, motor calculations, generator calculations, welder calculations, transformer formulas and calculations, miscellaneous commercial calculations, and service calculations for residential and commercial installations.

Element 1 – Ohm's Law and Voltage Drop, General Lighting and Receptacle Calculations – Basic Ohm's Law and single-phase and three-phase voltage drop are covered as well as general lighting calculations for one-family and multifamily dwellings. Included are practice review questions and answers.
Total time: 59 minutes and 25 seconds

Element 2 – General Lighting and Receptacle Calculations Continued – General lighting and receptacle calculations are continued adding small appliances and laundry circuits and applying appropriate demand factors for single and multifamily dwellings. Also covered are lighting loads in other than dwelling units and the application of demand factors in various types of occupancies. Included are practice review questions and answers.
Total time: 50 minutes and 28 seconds

Element 3 – General Lighting and Receptacle Calculations Continued, Cooking Equipment Calculations, and Dryer Calculations – General lighting and receptacle calculations are continued in various commercial applications. Cooking equipment calculations include household electric ranges in both single and multifamily dwellings as well as kitchen equipment in other than dwelling units. Household electric clothes dryers in single family and multifamily dwellings are also covered. Included are practice review questions and answers.
Total time: 59 minutes and 51 seconds

Element 4 – Fixed Appliance Calculations, and Grounding and Bonding – Fixed appliance calculations in dwelling units are explained. Article 100 definitions that apply to grounding and bonding are clarified and illustrated. Sizing grounding electrode conductors for grounded ac services and separately derived systems utilizing various grounding electrodes are also covered. Included are practice review questions and answers.
Total time: 57 minutes and 10 seconds

Element 5 – Grounding and Bonding Continued – Sizing grounding conductors are further explored focusing on main or system bonding jumpers and equipment bonding jumpers on the supply side of the service. Many examples are given for sizing the main grounding components of electrical services of various sizes. Included are practice review questions and answers.

Total time: 59 minutes and 46 seconds

Element 6 – Grounding and Bonding Continued, and Motor

Calculations – Grounding and bonding is further discussed, focusing on equipment bonding jumpers and equipment grounding conductors installed on the load side of the main service. Conductors are sized for various types of motors, including multiple motor applications, as well as short-circuit and ground-fault protection. Included are practice review questions and answers.

Total time: 57 minutes and 43 seconds

Element 7 – Generator Calculations, Welder Calculations, Transformer Formulas and Calculations, Miscellaneous Commercial Calculations, and Single Family Service Calculations

– The sizing of conductors for generators and single and multiple welders are explained. Transformer formulas and calculations are also illustrated. Also covered are miscellaneous commercial calculations such as general purpose receptacles, fixed multipurpose assemblies, heating and air conditioning, and sign circuits. The six basic areas of a single family service calculation are introduced. Included are practice review questions and answers.

Total time: 56 minutes and 13 seconds

Element 8 – Single Family Service Calculations Continued, Multifamily Service Calculations, Mobile Home Park Calculations, Recreational Vehicle Park Calculations, and Commercial Service Calculations

– Single family service calculations are continued along with multifamily service calculations. Also covered are mobile home park calculations, recreational vehicle park calculations and commercial service calculations. Included are practice review questions and answers.

Total time: 57 minutes and 40 seconds