

Article 220 - Load Calculations - 2023 NEC

Course Syllabus & Outline

Course Details: CEU Credits: 4 Contact Hours: 4

Course Type: Code Related

Required Textbook: 2023 NEC Code Book Recommended

Class Format/Location: Web-based course delivered online @ bluevoltceu.com

Prerequisite: Current or reciprocal state electrical license

Instructor: Rich Van Wert

Course Description:

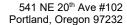
Article 220 is the 'go-to' article for calculation of branch circuit, feeders and service loads. Articles 210, 215 and 230 lay out rules for sizing these conductors, based on the calculations described in article 220. As such, one must understand 220 in order to fully comply with other provisions of the code. This course teaches load calculations for single-family and two-family dwelling units, explains demand factors and neutral load, and explains new additions to the article in the 2023 NEC.

Course Learning Objectives:

- Perform load calculations for single-family and two-family dwellings.
- Apply Ohm's Law and related concepts.
- Implement the 5-Part method of load calculation.
- Calculate neutral load.
- Understand updates to Article 220 in the 2023 NEC.

<u>Evaluation/Grading</u>: A comprehensive Final Exam that requires a 75% in order to pass. This Final Exam can be made required when necessary. Three progress quizzes during the course require 70% to pass.

<u>Control Time & Security:</u> 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.





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Course Outline:

Module 1 – 8 minutes

220.1 Scope includes calculation of branch-circuit, feeder, and service loads.

220.3 References for specific-purpose calculation requirements. 220.5 Calculations

Module 2 – 9 minutes

Calculating Lighting Load 220.10 General 220.41 Dwelling Units, Minimum Unit Load Table T220.42(A) General Lighting Loads by Occupancy

Module 3 - 6 minutes

Calculating Small Appliance Load 220.52(A) Small-appliance Circuit Load 220.52(B) Laundry Circuit Load

Module 4 – 4 minutes

Calculate Demand Factors 220.45 Lighting Load Demand Factors

Module 5 - 7 minutes

220.42(B) Energy Code 220.14(A) – (K) Specific Appliances or Loads

Quiz 1 - 20 minutes

Module 6 – 8 minutes

Calculate Appliances Fixed-In-Place Load 220.41 Dwelling Occupancies 220.53 Appliance Load – Dwelling Unit(s)

Table 430.248 Full-load Currents in Amperes, Single Phase AC Motors

Module 7 - 4 minutes

Calculate Dryer Load 220.54 Electric Clothes Dryers – Dwelling Unit(s) Table 220.54 Demand Factors for Household Electric Clothes Dryers

Module 8 – 14 minutes

Calculate Cooking Equipment Load 220.55 Electric Cooking Appliances in Dwelling Units and Household Cooking Appliances Used in Instructional Programs Table 220.55 Electrical Cooking Appliances in Dwelling Units Notes for Table 220.55

Module 9 - 8 minutes

Calculate Heat and Air Conditioning Load Calculate Largest Motor Load Section 220.57 Electric Vehicle Supply Equipment (EVSE) Load. Section 220.60 Noncoincident Loads

Quiz 20 minutes

Module 10 - 9 minutes

Optional Calculation Section 220.82(A) Feeder and Service Load Section 220.82(B) General Loads Section 220.82(C) Heating and Air-Conditioning Load

Module 11 - 10 minutes

Calculate Neutral Load Section 220.61(A) Basic Calculation Section 220.61(B) Permitted Reductions

Module 12 - 8 minutes

Part VI Health Care Facilities
Part VII Marinas, Boatyards, Floating
Buildings, and Commercial and
Noncommercial Docking Facilities

Quiz 3 - 20 minutes

Final Exam - 30 minutes