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**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](http://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.

**Evaluation/Grading:** 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.

**Control Time & Security:** 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.

## 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