Expect Excellence Apprenticeship Program

Level 3 – Semester 3 (Course 3C)

This semester advances apprentices through in-depth study of the National Electrical Code, Volume 2 and introduces concepts of Power Quality. Apprentices will interpret code sections for special occupancies, energy systems, and communication wiring, and apply knowledge through structured exams. The second half of the semester transitions into power quality, harmonics, voltage disturbances, and electrical noise, preparing apprentices for real-world troubleshooting and system optimization.

Course Objectives

- Interpret and apply NEC Volume 2 requirements to special occupancies, energy systems, and communication wiring.
- Demonstrate competency with pools, spas, solar systems, emergency/standby power, fire alarms, and optical fiber.
- Analyze and solve power quality issues including harmonics, electrical noise, grounding, bonding, and voltage disturbances.
- Prepare for licensing and competency exams through comprehensive review and applied practice.

Course Topics and Hours

Topic	Hours	Description
Orientation & NEC Review	2	Expectations, syllabus overview, and review of NEC fundamentals.
NEC Vol. 2: Special Occupancies	4	Articles 500–517 (special occupancies, commercial garages, healthcare). Random 5 questions per section.
NEC Vol. 2: Assembly & Systems	4	Articles 518–645 (assembly lines, mobile homes, welders, IT equipment). Random 5 questions per section.
NEC Vol. 2: Pools, Spas, Solar, Emergency Power	6	Articles 680–705 (pools, spas, hot tubs, solar, wind, emergency & standby power). Randomized exam practice.
NEC Vol. 2: Energy & Communication Systems	6	Articles 706–810 (energy storage, low voltage cables, fire alarm, optical fiber, communication wiring). Random 5 questions per section.
NEC Vol. 2: Exam Practice & Final	4	Final Exam B – Random order (pages 533–542, Q1–100 Evens).

Power Quality: Fundamentals	4	Chapters 1–3: Introduction, electrical theory, alternating current. All questions assigned.
Power Quality: Harmonics & Conductors	4	Chapters 4–5: Neutral conductor, harmonics. All questions assigned.
Power Quality: Voltage Issues	4	Chapters 6–7: Voltage disturbances, voltage window. All questions assigned.
Power Quality: Noise & Bonding	4	Chapters 8–9: Electrical noise, grounding & bonding. All questions assigned.
Power Quality: Power Quality Issues	4	Chapter 10: Troubleshooting & solving PQ issues. All questions assigned.
Power Quality: Exam & Competency	6	Final Exam (randomized from chapters 1–10). Competency exam via LMS.
Year-End Review	2	Reflection, surveys, and final wrap-up.

Total Contact Hours: 50

Instructional Method

The Expect Excellence Apprenticeship Program follows the Mike Holt curriculum, utilizing textbooks and supporting materials. Classes are delivered virtually via Zoom. Students are required to keep their cameras on and remain visible. Instructors take roll at the beginning, middle, and end of each session. Participation is required to ensure accountability. Assignments are given each class session and are graded and recorded through the program's Learning Management System (LMS), D2L.