

Expect Excellence Apprenticeship Program

Level 3 – Semester 2 (Course 3B)

Course Objectives

- Apply NEC requirements for basic and advanced motor controls.
- Demonstrate understanding of schematics, reversing controls, and VFD principles.
- Interpret and apply NEC Articles related to motor circuits, controllers, and advanced control systems.
- Apply ladder diagram logic, contactor and relay theory, and motor starter applications.
- Demonstrate competency in printreading across residential, commercial, industrial, and hazardous locations.
- Successfully complete lab sessions focused on advanced motor controls, calculations, and NEC article review.

Course Topics and Hours

Topic	Hours	Description
Basic Motor Controls (Motors – Controllers – Schematics)	8	NEC Article 430; Units 4–10 covering schematics, overcurrent protection, lights, switches, and tables.
Basic Motor Controls (Reversing & Multiple Motor Controls)	6	Chapters 3 & 4, Annex A; reversing controls, pushbuttons, and multiple motor applications.
Advanced Motor Controls	12	Electromagnetic theory, motor connections, relays, overloads, starters, ladder diagrams, VFD principles; Motor Control Fundamentals Chapters 1–16.
Motor Controls – Exams & Review	4	Comprehensive review and final exam covering NEC-based motor control applications.
American Ladder Institute Training	2	Ladder safety, inspection, and safe use practices per OSHA requirements.
Printreading (Residential, Commercial, Industrial, Hazardous Locations)	16	Interpreting blueprints for single-family, multifamily, commercial, industrial, and hazardous locations. Includes final exam.
In-Person Labs	16	Hands-on sessions in Denver and Phoenix focused on advanced motor controls, calculations, and NEC article review.

Total Contact Hours: 64 (including 16 hours of in-person lab instruction)

Instructional Method

The Expect Excellence Apprenticeship Program follows the Mike Holt curriculum, utilizing his 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, and student 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.