Electrical Trade Specialty | One Year Program: Scope & Sequence

Semester 1
ELE101 - Electrical and Power Transmission Installation I (90 days)

District Pre-Assessment

Unit 1 (45 Days)

Introduction & Safety:
- Orientation and IEC Principles
- Tools, Fasteners and Knots
- Intro to Safety and NEC
- Certifications: OSHA 10 Construction

Electrical Math:
- Intro to Electrical Charges and Basic Math
- Applied Math and Circuit Theory
- Ohm’s Law & Electrical Symbols
- Conduit Bending Math

Direct Current (DC) Fundamentals:
- Dwelling Circuit Requirements
- Outlet Locations
- Lighting Loads
- Conductor Types, Ampacity & Common Voltage Systems
- Voltage Drop, Cable, Conduit, and Tubing
- CTSO Integration (Leadership Skills): SkillsUSA Officer Training, Officer Elections, Chapter Meetings, SkillsUSA Fall Leadership Conference
- Work-Based Learning: Industry Guest Speaker, Mock Interview, Job Application
- Technical Standards: 1.1-1.17, 2.0-2.10, 3.1-3.5, 5.1, 4.1-4.5, 5.1-5.10,

Unit 2 (45 Days)

Terminology:
- Conductor Terminology
- Switches & Receptacle Terminology

Special Receptacles:
- GFCI protective devices
- AFCI protective devices
- Special Purpose Receptacles

Luminaries:
- Luminaries, Ballasts and Lamps

Series Circuit Construction:

- Box Fill & Sizing
- Intro to Series Circuits
- Lighting and Small Appliance Branch Circuits
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Fundraiser, Fall Leadership Conference, Regions Prep
- Work-Based Learning: Industry Guest Speaker
- Technical Standard: 2.1-2.10, 4.1-4.5, 5.1-5.10, 6.1-6.6

Semester Exam

Semester 2
ELE102 - Electrical and Power Transmission Installation II (90 days)

Unit 3 (45 Days)

Parallel Circuits:
- Intro to Parallel Circuits
- Track Lighting & Dimmers
- Laundry & Bathroom Receptacles
- Garage & Garage Door Circuits
- Underground Installations
- Parallel Circuit Calculations

Appliance & Special Purpose Outlets:
- Branch Circuit Installation
- NEC Requirements

Kitchen Appliances/Grounding:
- Ranges, Ovens, and other Kitchen Appliances & NEC requirements

Wet Circuits:
- Bathrooms, Exhaust Fans, Hydro-massage Tubs and NEC Requirements

Heating and Air Conditioning:
- HVAC Electrical Installations
- NEC Requirements
- CTSO Integration (Leadership Skills): SkillsUSA Regional Conference
- Work-based Learning: Industry Guest Speaker, Job Application
- Technical Standard: 1.14-17, 2.1, 2.5-2.10, 5.1-5.10, 6.0-6.6

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Unit 4 (45 Days)

**Specialty Electrical Circuitry:**
- Limited energy System
- Low-Voltage
- Fire Alarms
- Multiwire Branch Circuits
- Combination Circuits, Grounding and Bonding
- Service Entrance Calculations
- Swimming Pools & Spas
- Home Automation
- Photovoltaic Systems
- CTSO Integration (Leadership Skills): SkillsUSA State Conference
- Work-based Learning: Industry Guest Speaker, Resume and Cover Letter, Mock Interview, School-Based Enterprise
- Technical Standard: 2.1, 2.4-2.5, 2.9, 5.2, 6.1-6.6
- Certifications: IEC Year One Apprenticeship

**District Post Assessment**

Arizona Department of Education (ADE)
Independent Electrical Contractors (IEC)
National Electrical Code (NEC)