

# 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
- Professional Skills: 1.A-D, 2.A-C, 4.A-F, 7.A-C
- Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5, ELA.11-12.SL.4, ELA.11-12.L.4, 5.NF.B.3, 5.NF.B.6, 5.NF.B.7
- 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, Regionals Prep
- Professional Skills: 3.A-E, 4.A-F, 2.A-C, 4.A-F
- Academic Standards: ELA.11-12.W.4, ELA.11-12.SL.4, ELA.11-12.L.4
- 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
- Professional Skills: 1.A-D, 5.A-E, 6.A-C, 8.A-I
- Academic Standards: ELA.11-12.L.4, ELA.11-12.SL.5, 5.NF.B.7, 7.EE.B.3
- 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

## 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
- Professional Skills: 2.A-C, 3.A-E, 4.A-F
- Academic Standards: ELA.11-12.W.4, ELA.11-12.L.4 5.A-E  
ELA.11-12.SL.4, 7.EE.A.2
- 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)