Course Description

EEV0163 | Low Voltage Technician 2 | 5.00 credits

This course focuses on alternating current (AC) and direct current (DC) circuits and electronic devices, including an overview of applicable test equipment, cable and terminations used in the installation of low-voltage systems. Further instruction on specific trade-related drawings, codes and standards will be discussed. OSHA 10 or OSHA 30 Construction Industry training will be provided.

Course Competencies

Competency 1: The student will demonstrate comprehension of the fundamentals of common building construction methodologies (wood frame, metal frame, masonry, concrete, etc.) and how they affect the installation of electronic systems and cabling by:

1. Identifying electronic systems and cabling installation practices for various applications depending on the construction methodology (e.g. cable raceways and conduit in masonry, drilling pathways in framing, etc.)
2. Explaining and following applicable codes/laws pertaining to the installation. Analyzing various electronic systems and cabling installation scenarios (framing vs. concrete/masonry) and choosing/applying the correct solution; troubleshooting any issues
3. Explaining the differences between residential and commercial applications, including occupancies, and how these affect the design and installation of integrated systems

Competency 2: The student will be able to identify and construct common cables used in electronic systems integration by:

1. Identifying and constructing/terminating the following connections: RJ-45 (aka. 8P8C), RJ-11 (aka. 6P4C), RJ-25 (aka. 6P6C), RJ-31x, Coax F, BNC, RCA, Terminal Block (aka.Captive Screw), Solderless (e.g forked ring or spade), Component Video, XLR, Fiber Optic Connections, Phone Plugs - standard,mini, sub-mini (e.g. TS, TRS, TRRS), Speaker (e.g. banana plugs, binding posts), Euroblock (aka. phoenix), Crimp (e.g., jelly, beanies; aka. beans, dolphins), IDC Insulation Displacement (e.g. 110 blocks, modular/keystone jacks, 66 blocks, krone blocks), Speaker Twist (aka. speakON), and Soldered
2. Defining common connector color codes for telephone, speakers, data and video according to standards TIA-568 and ANSI/CTA/CEDIA-2030-A Multi- Room Audio Cabling Standard

Competency 3: The student will be able to use fasteners, anchors and back boxes to mount cable and other equipment to structures by:

1. Properly using the following: cable fasteners, cable trays and raceways, threaded fasteners, mechanical fasteners, power actuated tool fasteners, epoxy anchoring system. Installing boxes, mud rings, cable hangers, speaker rings, stub outs and ties at appropriate heights and locations
2. Demonstrating comprehension of static vs. dynamic load requirements
3. Demonstrating comprehension of the load capacity of the entire system that will support the installed devices, including the materials being mounted to

Competency 4: The student will be able to identify applicable building codes by:

1. Describing what National Electric Code (NEC) is and how it affects the integrated systems industry
2. Identifying sections in the National Electric Code (NEC) that are applicable to low-voltage installations
3. Describing how applicable codes and the latest code changes affect job site operations
4. Identifying items that can be regulated by federal, state, county, local/ other codes, and Home Owners Associations (HOAs)
5. Describing the application of the International Building Code (IBC) and the International Residential Code (IRC) as they relate to hole size & cable pathways in various structural members & building materials

Competency 5: The student will be able to demonstrate applicable safety practices by:

1. Completing an OSHA 10 or an OSHA 30 Construction Industry training

2. Applying proper safety practices for electrical shock, personal protection, lifting, ladders, scaffolding and first aid

Competency 6: The student will be able to define the electronic systems integration and automation industry by:
1. Explaining the definition and scope of the industry, including its history, trends and the most commonly installed sub-systems
2. Explaining the Custom Electronic Design and Installation Association (CEDIA) history, mission and ethical standards. Identifying the different company types including integrators, retailers, distributors, manufacturer reps, manufacturers and specialty designers
3. Identifying common project stakeholders including clients, architects, interior designers, builders and other trade professionals
4. Identifying the different career paths in the electronics integration and automation field.
5. Identifying other appropriate industry organizations, such as AVIXA, NSCA, TIA, BICSI, etc.

Competency 7: The student will be able to explain the business fundamentals of electronic systems technology integration by:
1. Explaining small business fundamentals
2. Applying project management fundamentals
3. Applying customer service techniques
4. Explaining sales, service and recurring revenue

<u>Learning Outcomes:</u>
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively