ATCW-2120: ADVANCED SYSTEMS TRANSPORT

Cuyahoga Community College

Viewing: ATCW-2120 : Advanced Systems Transport

Academic Term:
Spring 2019

Subject Code
ATCW - AIT-Communication Workers

Course Number:
2120

Title:
Advanced Systems Transport

Catalog Description:
Certification course covering skills, transmission mediums and administration tasks required for industry proficiency. In addition, installation of cable systems in conjunction with industry standards will be covered.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
Departmental approval: admission into the CWA apprenticeship program.

Outcomes

Course Outcome(s):
I. Utilize the skills, preparations, tools and equipment required for the information transport industry proficiency certification.

Objective(s):
1. Demonstrate the skills required for industry certification.
2. Discuss terms related to information transport systems.
3. Demonstrate use of the tools used for systems installation and testing.
4. Differentiate between tools for installation and equipment testing.
5. Explain the required proficiency testing process required for industry certification.

Course Outcome(s):
II. Examine the transmission mediums, fundamentals and safety precautions used in conjunction with industry codes of standards required for structured cable systems installations.

Objective(s):
1. Explain industry codes and standards related to information transport.
2. Discuss the code of conduct mandated by the industry to maintain professionalism on the work site.
3. Discuss basic systems operations
4. Explain the different transmission mediums used in cabling systems.
5. Discuss the transmission fundamentals required to match correct mediums with signal types.
6. Explain the worker protection safety regulations required for cable systems installations

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Course Outcome(s):
III. Install cable systems with respect to prescribed industry methods and procedures.

Objective(s):

1. Perform installation site surveys and develop appropriate job plans.
2. Discuss the prescribed requirements required to properly pull and position wire for installations.
3. Discuss manufacturers' termination requirements to comply with testing parameters.
4. Discuss cable testing and troubleshooting requirements for proper installation verification.
5. Differentiate between retrofit, upgrades and moves, ads and changes (MAC).

Course Outcome(s):

IV. Perform administrative tasks and respective duties for cabling infrastructure.

Objective(s):

1. Demonstrate the administrative tasks related to cabling infrastructure.
2. Discuss the terms used with respect to structured cabling systems.
3. Explain the scope of proper labeling.
4. Discuss the procedures that are to be followed for recordkeeping.
5. Differentiate between operational and maintenance benefits.
6. Demonstrate the procedures to be followed for cable testing recordkeeping.

Course Outcome(s):

V. Train and oversee installers for the communications transport industry and National Electrical Code compliance.

Objective(s):

1. Explain the process of advancing within the industry's skillsets and certifications including on the job training (OJT).
2. Discuss the required skillsets necessary for the advancement of industry classification.
3. Develop techniques required to train and oversee communications transmission installers.
4. Discuss the qualifications of training personnel required for industry advancement.

Methods of Evaluation:

1. Quizzes
2. Tests
3. Class participation

Course Content Outline:

1. Industry proficiency certification
    a. Skill
        i. Wire installation
        ii. Terminations
        iii. Sizes and capability
        iv. Splicing
        v. Color code
    b. Terminology
        i. Color code
        ii. Tips and rings
        iii. Punch down
        iv. Guage
        v. Demarcation
        vi. Hanger
        vii. Conduit
        viii. End point
        ix. Termination block
        x. Rack
    c. Tools
        i. Punch
        ii. Snips
        iii. Fish tape

    iv. Needle nose
    v. Lineman pliers
  d. Testing tools
    i. Time domain reflectometer TDR
    ii. Time domain relectometer
    iii. Toner generator/contiunity tester
    iv. Land area network (LAN) tester
    v. Multimeter
    vi. Butt set
  e. Testing process
    i. Industry standards
    ii. Compliance testing
    iii. Continuing education
2. Transmission mediums, fundamentals and safety
  a. Mediums
    i. Signal content
      1. Data
      2. Voice
      3. Voltage
    ii. Pathway
      1. Twisted pair
      2. Coaxial copper
      3. Fiber optic
      4. Wireless
  b. Fundamentals
    i. Medium selection
    ii. Signal type
    iii. Customer requests
    iv. Industry standards
    v. Environmental
  c. Safety regulations
    i. Occupational Safety and Health Administration (OSHA)
    ii. National Electrical Code (NEC)
    iii. Local ordinances
    iv. Customer policies
  d. Codes and standards
    i. Personal professionalism
    ii. Union ethics
    iii. Customer relations
  e. Basic systems operations
3. Installation
  a. Site survey
    i. Location indentification
    ii. Customer needs
    iii. Pathways
    iv. Penetrations
    v. Suspensions
    vi. Medium identification
    vii. Height requirements
    viii. Terminatins
    ix. Conduit versus open air
    x. Usage
  b. Prescribed requirements
    i. Specifications
    ii. Job expectations
  c. Troubleshooting
    i. Continuity
    ii. Voltage
    iii. Pathways

iv. Manufacturer warranty
v. Performance

d. Retrofit, upgrades and MAC

4. Administrative tasks
   a. Terminology
      i. As builts
      ii. Downloads
      iii. Data log
      iv. Bill of material
      v. Customer report
      vi. Daily report
      vii. On the job time recordkeeping
      viii. Structured cabling system
   b. Tasks
      i. Labeling
      ii. Bill of material
      iii. Documentation
      iv. Reports
      v. Test data
   c. Labeling scope
      i. Component identification
      ii. Pathways
      iii. Equipment
   d. Recordkeeping procedure
      i. Manual
      ii. Computer based
      iii. Maintenance
      iv. MAC
   e. Benefits
      i. Operational
         1. MAC
         2. As buils
      ii. Maintenance
         1. Repairs
         2. Tests
         3. Damage locator
   f. Cable testing recordkeeping
      i. Simple
      ii. Complex
      iii. End user
      iv. Compliance
      v. Maintenance
      vi. Manufacturer specifications
5. Training
   a. Advancement processes
      i. OJT
      ii. Industry standards
      iii. Continues Education Units (CEU"s)
      iv. Certifications
   b. Skill sets
      i. Classroom performance
      ii. Emerging technologies
      iii. Professional skills development
      iv. Personal relations
   c. Techniques
      i. Time management
      ii. Product handling
      iii. Ergonomics
   d. Qualifications

i. Certifications
    1. Product
    2. Industry
ii. Communication
iii. Organizational
iv. Analysis

Resources

BICSI. *Telecommunications Cabling Installation IN101.* V 6.1. V 6.1 Tampa, Florida, 2012.

BICSI. *Information Technology Systems Installation, ITSIMM.* 6th Edition. BICSI Tampa, Florida, 2012.

Independent Electrical Contractors Chesapeake and Western Electrical Contractors Association. *Electrical Pre-Apprenticeship Workforce Development.* 2013 Edition. Cengage Learning Clifton Park, NY, 2013.

Resources Other

www.uniquefirestop.com

www.**cablinginstall**.com

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