

ATCW-2010: INFORMATION TRANSPORT - FIBER

Cuyahoga Community College

Viewing: ATCW-2010 : Information Transport - Fiber

Academic Term:

Spring 2019

Subject Code

ATCW - AIT-Communication Workers

Course Number:

2010

Title:

Information Transport - Fiber

Catalog Description:

Advanced certification course covering Fiber Optics skills, transmission mediums and administration tasks required for industry proficiency. In addition, installation of Fiber Optic cable systems in conjunction with industry standards will be covered. Course to enable learners to be self sufficient and able to start, run, and complete fiber optic projects.

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. Organize the skills, preparations, tools and equipment required for the information transport industry proficiency certification for fiber optic mediums.

Objective(s):

1. Contrast the skills required for industry certification.
2. Define terms related to information transport systems.
3. Identify and describe the tools used for systems installation and testing of fiber optics.
4. Differentiate between tools for installation and equipment testing of fiber optics
5. State and explain the required proficiency testing process required for industry certification.
6. Develop skills required to read and interpret base blue prints and scope of work.

Course Outcome(s):

II. Describe the transmission mediums, fundamentals and safety precautions used in conjunction with industry codes of standards required for structured cable systems installations and field management.

Objective(s):

1. Identify fiber optics mediums industry codes and standards related to information transport.
2. State the code of conduct mandated by the industry to maintain professionalism on the work site.
3. Develop basic skill sets required to manage field personnel.
4. Develop skills required to read and interpret base blue prints and scope of work
5. State and classify the different transmission mediums used in cabling systems.
6. Identify the transmission fundamentals required to match correct mediums with signal types.
7. List the worker protection safety regulations required for cable systems installations.

Course Outcome(s):

III. Demonstrate the ability to install fiber optic cable systems with respect to prescribed industry methods and procedures.

Objective(s):

1. Employ installation site surveys and develop appropriate job plans.
2. Apply manufacturers' termination requirements to comply with testing parameters.
3. Differentiate between retrofit, upgrades and moves, adds and changes (MAC).
4. Review and apply advanced requirements involving retrofits and backbone upgrades.

Course Outcome(s):

IV. Evaluate the purpose of administrative tasks for cabling infrastructure and identify the respective duties.

Objective(s):

1. A. List the administrative tasks related to fiber optic cabling infrastructure.
2. B. Define the terms used with respect to structured fiber optic cabling systems.
3. C. State the scope of proper labeling.
4. D. Employ the procedures that are to be followed for recordkeeping.
5. E. Differentiate between operational and maintenance benefits.
6. F. Apply the procedures to be followed for fiber optic cable testing recordkeeping.
7. G. Establish skills to interact directly with the customer or project manager.

Methods of Evaluation:

1. Quizzes
2. Test
3. Class participation

Course Content Outline:

1. Industry proficiency certification
 - a. Skill
 - i. Fiber optic cable
 - ii. Fiber optic terminations
 - iii. Sizes and capability of fiber optic mediums
 - iv. Splicing fiber optic cable
 - v. Color code
 - b. Terminology
 - i. Fusion splicing
 - ii. Anaerobic connections
 - iii. Mechanical crimp connectors
 - iv. Ultra violet cured connectors
 - v. Hot melt connectors
 - vi. Multi mode
 - vii. Single mode
 - viii. Light interface unit
 - ix. Color code
 - x. Fish tape
 - c. Tools for fiber optics
 - i. Cleaver
 - ii. Fusion splicer
 - iii. Snips
 - d. Testing tools
 - i. Optical time domain reflector
 - ii. Fiber microscope
 - iii. Light loss meter
 - iv. Break/Fault locator
 - e. Testing process

- i. Industry standards
 - ii. Compliance testing
 - iii. Continuing education
 - f. Connector types
 - i. LC
 - ii. SC
 - iii. ST
 - iv. Others
 - g. Blue print reading skills
 - i. Pathways
 - ii. Rack layout
- 2. Transmission mediums, fundamentals and safety
 - a. Mediums
 - i. Signal content
 - 1. Data
 - 2. Voice
 - 3. Light
 - ii. Pathway
 - 1. Multi-mode fiber optic
 - 2. Single mode fiber optic
 - 3. Hybrid fiber optic
 - b. Fundamentals
 - i. Medium selection
 - ii. Signal type
 - iii. Customer requests
 - iv. Industry standards
 - v. Environmental
 - vi. Outside Plant cable installations
 - c. Safety regulations
 - i. Occupational Safety and Health Administration (OSHA)
 - ii. National Electrical Code (NEC)
 - iii. Local ordinances
 - iv. Customer policies
 - v. Environmental Protection Agency
 - vi. Manholes and tunnels
 - vii. Laser safety
 - viii. Cleared fiber hazards
 - d. Codes and standards
 - e. Codes of conduct
 - i. Personal professionalism
 - ii. Union ethics
 - iii. Customer relations
 - f. Skill sets
 - i. Blue prints
 - ii. Work scope
- 3. Fiber optic installation
 - a. Site survey
 - i. Location identification
 - ii. Customer needs
 - iii. Pathways
 - iv. Penetrations
 - v. Suspensions
 - vi. Medium identification
 - vii. Height requirements
 - viii. Terminations
 - ix. Interduct
 - x. Armored shields
 - b. Prescribed requirements

- i. Specifications
 - ii. Job expectations
 - c. Terminations
 - i. Industry standards
 - ii. Custome needs
 - d. Troubleshooting
 - i. Light loss
 - ii. Fault locator
 - iii. Pathways
 - iv. Manufacturer warranty
 - v. Performance
 - vi. Retrofit, upgrades and MAC
 - vii. Backbone upgrades
- 4. Administrative tasks
 - a. Tasks
 - i. Labeling
 - ii. Bill of material
 - iii. Documentation
 - iv. Reports
 - v. Test data
 - b. Terminology
 - i. As built
 - ii. Downloads
 - iii. Data log
 - iv. Bill of material
 - v. Customer report
 - vi. Daily report
 - vii. On the job time recordkeeping
 - viii. Structured Fiber Optic cabling system
 - c. Labeling scope
 - i. Component identification
 - ii. Pathways
 - iii. Equipment
 - iv. Fire stop penetrators
 - d. Recordkeeping procedure
 - i. Manual
 - ii. Computer based
 - iii. Maintenance
 - iv. MAC
 - e. Benefits
 - i. Operational
 - 1. MAC
 - 2. As built
 - 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
 - g. Professional skills
 - i. Project manager
 - ii. Customers
 - iii. Expected result

Resources

Author BICSI. *Telecommunications Cabling Installation IN250*. 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.

National Fires Association (NFPA). *National Electric Code 2011 (NEC)*. 2011 Edition. NFPA Quincy, Massachusetts, 2010.

Resources Other

www.uniquefirestop.com

www.cablinginstall.com

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