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10-451-205 061922 Data Communications Systems

Course Outcome Summary

COURSE INFORMATION

Alternate Title: Data Communications Systems

Description:

10-451-205 DATA COMMUNICATIONS SYSTEMS ...starts from the basics and gives the learner the tools to design and maintain industrial communications systems. You'll learn the underlying principles behind today's industrial communications systems.

Instructional Level: 10

Total Credits: 2

Total Hours: 54

COURSE HISTORY

Status: Active

Active Date: 5/23/2021

Last Revision Date: 8/28/2023

Revised By: Kristina Wendricks (15002977)

Last Approval Date: 8/28/2023

Approved By: Kristina Wendricks (15002977)

COURSE COMPETENCIES

1. **Explain safety procedures and hazards in the fiber optic industry**

    Status: Active

    Assessment Strategies

    1.1. Objective exam/quiz

    Criteria

    1.1. Identify potential hazards on the worksite and how to mitigate them

    1.2. Use proper PPE for working with fiber optic cables

    1.3. Recognize proper procedures for determining if a fiber optic cable is transmitting a signal

    1.4. Recognize IEEE and NESC standards and codes

    1.5. Recognize Center for Devices and Radiological Health (CDRH) codes

    Learning Objectives

    1.a. Identify safety procedures to use while working with fiber optic cables.

    1.b. Safety Standards

2. **Identify different types of tools that are used and how to properly to handle the tools.**

Status: Active

Assessment Strategies

2.1. Objective exam/quiz

2.2. Demonstration/observation

Criteria

Learners will be successful when they are able to:

2.1. Use cable entry tools

2.2. Use splicing tools

2.3. Identify power tools commonly used in the telecommunications Industry

Learning Objectives

2.a. Identify hand tools and how to properly use them.

2.b. Identify power tools and how to properly use them

3. **Carry out OSP cable entries and identify OSP structures.**

   Status: Active

Assessment Strategies

3.1. Objective exam/quiz

3.2. Demonstration/observation

Criteria

3.1. Carry out cable jacket removal

3.2. Carry out removal of aramid yarn

3.3. Carry out removal of strength members

3.4. Carry out removal of armor

3.5. Carry out ring cutting cable jackets

3.6. Carry out slitting buffer jackets

3.7. Carry out removal of fiber coating

3.8. Identify handholes / vaults and flower pots for underground cable access

3.9. Identify building riser and entry points

3.10. Identify utility pole risers for underground to aerial transitions

3.11. Identify splice points, peds, and cabinets

3.12. Carry out cable jacket removal

3.13. Carry out removal of aramid yarn

3.14. Carry out removal of strength members

3.15. Carry out removal of armor

3.16. Carry out ring cutting cable jackets

3.17. Carry out slitting buffer jackets

3.18. Carry out removal of fiber coating

3.19. Identify handholes / vaults and flower pots for underground cable access

3.20. Identify building riser and entry points

3.21. Identify utility pole risers for underground to aerial transitions

3.22. Identify splice points, peds, and cabinets

Learning Objectives

3.a. Carry out cable entry procedures to access individual fiber strands

3.b. Identify cable OSP structures and access points

4. **Carry out fiber optic cable installation in ducts.**

   Status: Active

Assessment Strategies

4.1. Objective exam/quiz

4.2. Demonstration/observation

Criteria

Learners will be successful when they are able to:

4.1. Carry out installation of mule tape (pull line)

4.2. Apply lubricant in duct for ease of installation

4.3. Carry out installation of pulling sock

4.4. Carry out installation of pulling swivel

4.5. Carry out cable pulling into duct

Learning Objectives

4.a. Prepare duct for fiber installation

4.b. Carry out installation of fiber optic cable in duct

5. **Carry out proper cable management of OSP fiber optic cable.**

   Status: Active

Assessment Strategies

5.1. Objective exam/quiz

5.2. Demonstration/observation

Criteria

Learners will be successful when they are able to:

5.1. Carry out placement of fiber optic expansion loops in handholes

5.2. Carry out labeling of fiber optic cable in handholes

5.3. Carry out placement of fiber optic loops and expansion at termination panels

5.4. Carry out labeling of fiber optic cable at termination panels

Learning Objectives

5.a. Carry out cable management in handholes

5.b. Carry out cable management at termination panels

6. Recognize the characteristics and purpose of ONTs and OLTs.

Status: Active

Assessment Strategies

6.1. Objective exam/quiz

6.2. Demonstration/observation

Criteria

Learners will be successful when they are able to:

6.1. Describe where ONTs are used in a network

6.2. Describe how to install an ONT

6.3. Describe the technical tasks to install an ONT

6.4. Carry out an ONT installation

6.5. Describe where OLTs are used in a network

6.6. Describe the technical tasks to install an OLT

6.7. Carry out an OLT installation

Learning Objectives

6.a. Identify Optical Network Terminals (ONTs) and their purpose in FTTx Networks

6.b. Identify Optical Line Terminals (OLTs) and their purpose in FTTx Networks