

# TECHNOLOGY INTEGRATION/1: COPPER AND FiOs CABLING (180 Hours)

Course No.: 72-85-80

## COMPETENCY CHECKLIST

Student Name \_\_\_\_\_

Teacher Name \_\_\_\_\_ School Site \_\_\_\_\_

Start Date \_\_\_\_\_ Completion Date \_\_\_\_\_ Certificate Date \_\_\_\_\_

Teacher Signature \_\_\_\_\_ Student Signature \_\_\_\_\_

(Signatures verify completion of course competencies)

### A. ORIENTATION AND SAFETY (5 hrs)

- \_\_\_\_\_ 1. Scope and purpose of course
- \_\_\_\_\_ 2. Course content as part of Linked Learning
- \_\_\_\_\_ 3. Classroom policies and procedures
- \_\_\_\_\_ 4. Different occupations in Energy & Utilities
- \_\_\_\_\_ 5. Promoting gender equity in field
- \_\_\_\_\_ 6. OSHA laws governing technicians
- \_\_\_\_\_ 7. Impact of EPA legislation on industry
- \_\_\_\_\_ 8. Proper disposal of hazardous waste
- \_\_\_\_\_ 9. NEC and its role: TI installers
- \_\_\_\_\_ 10. MSDS as it applies to the TI field
- \_\_\_\_\_ 11. LEED Green Building Rating System
- \_\_\_\_\_ 12. Safety code application for the TI field
- \_\_\_\_\_ 13. CA Title 24 Energy Efficiency Standards
- \_\_\_\_\_ 14. First aid/emergency procedures
- \_\_\_\_\_ 15. Safety test

### B. RESOURCE MANAGEMENT (5 hrs)

- \_\_\_\_\_ 1. Define listed terms related to topic
- \_\_\_\_\_ 2. Management of listed resources
- \_\_\_\_\_ 3. Examples of effective management
- \_\_\_\_\_ 4. Benefits of effective resource management
- \_\_\_\_\_ 5. Resource management benefits/liabilities

### C. TRADE MATHEMATICS (10 hrs)

- \_\_\_\_\_ 1. Practical applications of math in TI field
- \_\_\_\_\_ 2. Solving whole number problems
- \_\_\_\_\_ 3. Solving fraction problems
- \_\_\_\_\_ 4. Solving decimal problems
- \_\_\_\_\_ 5. Changing fractions to decimals
- \_\_\_\_\_ 6. Changing decimals to fractions
- \_\_\_\_\_ 7. English/metric systems of measuring length
- \_\_\_\_\_ 8. English/metric systems of measuring weight
- \_\_\_\_\_ 9. English/metric measuring volume/capacity

- \_\_\_\_\_ 10. Solving measuring problems
- \_\_\_\_\_ 11. Measuring using tools common to the trade
- \_\_\_\_\_ 12. Metric ascending/descending powers of 10
- \_\_\_\_\_ 13. Convert English numbering system to metric
- \_\_\_\_\_ 14. Convert metric to English numbering system
- \_\_\_\_\_ 15. Calculate square roots of numbers
- \_\_\_\_\_ 16. Solving geometric problems
- \_\_\_\_\_ 17. Solving algebraic problems
- \_\_\_\_\_ 18. Solving problems with percentages
- \_\_\_\_\_ 19. Interpreting graphs
- \_\_\_\_\_ 20. Using a calculator

### D. WIRING AND "ROUGH-IN" TOOLS & EQUIPMENT\* (10 hrs)

- \_\_\_\_\_ 1. Demo listed basic wiring techniques
- \_\_\_\_\_ 2. Demo use of LAN cable tester
- \_\_\_\_\_ 3. Demo use of "Rough-in" tools
- \_\_\_\_\_ 4. Using correct tools for the job

### E. RESIDENTIAL AC WIRING AND LIGHTING\* (30 hrs)

- \_\_\_\_\_ 1. Organizations for wiring and lighting
- \_\_\_\_\_ 2. Licensing requirements for wiring/lighting
- \_\_\_\_\_ 3. Define listed terms related to topic
- \_\_\_\_\_ 4. Different wiring types
- \_\_\_\_\_ 5. Different lighting types
- \_\_\_\_\_ 6. Different types of lighting controls
- \_\_\_\_\_ 7. Different types of outdoor security lighting
- \_\_\_\_\_ 8. Discuss listed topics/components
- \_\_\_\_\_ 9. Demo listed wiring/lighting techniques

### F. COPPER LOW-VOLTAGE STRUCTURED WIRING\* (35 hrs)

- \_\_\_\_\_ 1. Define listed terms related to topic
- \_\_\_\_\_ 2. Residential low-voltage wiring standards
- \_\_\_\_\_ 3. Structured wiring installation regulations

- \_\_\_\_\_ 4. Installation drawings for wiring design
- \_\_\_\_\_ 5. Features of home-run (star) wiring
- \_\_\_\_\_ 6. Grade 1 and Grade 2 wiring requirements
- \_\_\_\_\_ 7. Composition of bundled cabling
- \_\_\_\_\_ 8. 5 types of cables used in residential wiring
- \_\_\_\_\_ 9. Discuss listed topics
- \_\_\_\_\_ 10. Draw connections: RJ-11 cable termination
- \_\_\_\_\_ 11. Use structured wiring in new construction
- \_\_\_\_\_ 12. Compare categories of cables
- \_\_\_\_\_ 13. Demo listed wiring techniques

**G. HOME/SMALL OFFICE LOCAL AREA NETWORKS**

**(LAN)\*** (20 hrs)

- \_\_\_\_\_ 1. Define listed terms related to topic
- \_\_\_\_\_ 2. Designs for connecting home networks
- \_\_\_\_\_ 3. Federal, state, and local requirements: LAN
- \_\_\_\_\_ 4. Network protocols of HomePNA and HPLA
- \_\_\_\_\_ 5. Jurisdiction of IEEE
- \_\_\_\_\_ 6. Various IEEE 802.3 Ethernet standards
- \_\_\_\_\_ 7. Features and benefits of Fast Ethernet
- \_\_\_\_\_ 8. Guidelines/limitations of Gigabit Ethernet
- \_\_\_\_\_ 9. Components of home/small office LAN
- \_\_\_\_\_ 10. Network media used in home networks
- \_\_\_\_\_ 11. Benefits/key features of wireless
- \_\_\_\_\_ 12. Benefits/key features of Bluetooth
- \_\_\_\_\_ 13. Universal Plug and Play (UPnP) initiative
- \_\_\_\_\_ 14. Demo listed designs/configurations

**H. LAN ADMINISTRATION FOR COPPER AND**

**FIOS)\*** (20 hrs)

- \_\_\_\_\_ 1. Define types of network services
- \_\_\_\_\_ 2. Industry standards for LAN administration
- \_\_\_\_\_ 3. Features of Microsoft network products
- \_\_\_\_\_ 4. File systems associated with Microsoft O/S
- \_\_\_\_\_ 5. Compare and contract network services
- \_\_\_\_\_ 6. Define listed terms related to topic
- \_\_\_\_\_ 7. Define/discuss listed protocols
- \_\_\_\_\_ 8. Setting up private home networks
- \_\_\_\_\_ 9. Subnet mask & residential gateway
- \_\_\_\_\_ 10. Configuring network devices
- \_\_\_\_\_ 11. Discuss how NAT functions in a network
- \_\_\_\_\_ 12. Purpose of firewalls and encryption
- \_\_\_\_\_ 13. Virtual private networks for remote access
- \_\_\_\_\_ 14. Network-analyzing utilities
- \_\_\_\_\_ 15. Exam on network protocols and their uses

**I. BROADBAND INTERNET ACCESS**

**TECHNOLOGIES)\*** (20 hrs)

- \_\_\_\_\_ 1. Define listed terms related to topic
- \_\_\_\_\_ 2. Regulations for broadband access install

- \_\_\_\_\_ 3. Industry standards for broadband technology
- \_\_\_\_\_ 4. 5 main types of broadband internet access
- \_\_\_\_\_ 5. Pros/Cons of BPL Internet access service
- \_\_\_\_\_ 6. Types of DSL available for home technology
- \_\_\_\_\_ 7. Location & purpose: of DSL splitter
- \_\_\_\_\_ 8. Functions performed by a DSLAM
- \_\_\_\_\_ 9. Operation of cable broadband internet system
- \_\_\_\_\_ 10. Major components in broadband system
- \_\_\_\_\_ 11. Parameters of ISDN broadband service
- \_\_\_\_\_ 12. Standards for a cable modem
- \_\_\_\_\_ 13. Pros/Cons of satellite broadband service
- \_\_\_\_\_ 14. Impact that latency has on satellite internet
- \_\_\_\_\_ 15. System flow diagram for satellite network
- \_\_\_\_\_ 16. Regulations for installation of satellites
- \_\_\_\_\_ 17. Broadband from fixed wireless carriers
- \_\_\_\_\_ 18. Demo listed broadband access techniques
- \_\_\_\_\_ 19. Preventative maintenance techniques

**J. FIBER OPTICS)\*** (20 hrs)

- \_\_\_\_\_ 1. Define listed terms related to topic
- \_\_\_\_\_ 2. Features of fiber optic cable
- \_\_\_\_\_ 3. Features of types of fiber
- \_\_\_\_\_ 4. Cable designs
- \_\_\_\_\_ 5. Different fiber connector types
- \_\_\_\_\_ 6. Different types of fiber cables
- \_\_\_\_\_ 7. Components of fiber-optic relay system
- \_\_\_\_\_ 8. Regulations for fiber optic systems
- \_\_\_\_\_ 9. Industry standards for fiber optic systems
- \_\_\_\_\_ 10. Advantages of fiber optic over copper wire
- \_\_\_\_\_ 11. Operation of equipment in fiber optic industry
- \_\_\_\_\_ 12. Demo splicing fiber optic cable
- \_\_\_\_\_ 13. Demo listed fiber optic cable techniques
- \_\_\_\_\_ 14. Preventative maintenance techniques

**K. EMPLOYABILITY SKILLS** (5 hrs)

- \_\_\_\_\_ 1. Employer requirements in an employee
- \_\_\_\_\_ 2. Identify potential employers in job search
- \_\_\_\_\_ 3. Electronic social networking in the job search
- \_\_\_\_\_ 4. Sample resumes and cover letters
- \_\_\_\_\_ 5. Accurate/legible/complete job application
- \_\_\_\_\_ 6. Sample job application
- \_\_\_\_\_ 7. Enthusiasm for job
- \_\_\_\_\_ 8. Appropriate appearance on job
- \_\_\_\_\_ 9. Continuous upgrading of job skills
- \_\_\_\_\_ 10. Customer service to establish relationships
- \_\_\_\_\_ 11. Appropriate interview techniques
- \_\_\_\_\_ 12. Resources to use for successful interview
- \_\_\_\_\_ 13. Sample follow-up letters
- \_\_\_\_\_ 14. Appropriate follow-up procedures