



A Unit of the State University of New York

1-800-891-6960

Telecommunications Technician Advanced

Course Number: WTEL 300

Credits: 1.6 CEU's (Continuing Education Units)

Classroom Hours: 16 Hours

Dates & Times: October 31 - November 3, 2011, 5 - 9 p.m.

Location: 356 7th Avenue, New York City, NY

Course Description: This course discusses and demonstrates the fundamentals of telecommunications including test equipment, troubleshooting, transmission protocols, telecom mathematics, optical wiring, and wireless telephony. These concepts are reinforced with a variety of hands-on labs. This course helps prepare the student for the ETA Telecommunications Electronics Technician (TCM) exam.

Prerequisites: Telecommunications Technician Intro, Telecommunications Technician Applied or equivalent training or experience.

Target Audience: Contractors, union craftsman, electricians, technicians, installers, LAN managers/administrators, end-users, engineers, MIS managers, facilities managers, architects and developers, systems engineers, telecom managers and anyone involved in repairing, installing, maintaining, designing, evaluating, or provisioning Telecommunications equipment or related technology.

Course Outline



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Network Infrastructures and Topologies

- Define RS232 and show how and where this standard is used
- Describe common transmission protocols
- Explain the difference between a LAN and a WAN
- Show an ability to install a small business WAN system and to troubleshoot problems in it

Office Wiring

- List building wiring standards as set by ANSI, EIA/TIA and NFPA (NEC)
- Explain methods of pre-wiring and ways to wire existing buildings, including entry, attic and crawl space precautions and methods of 'fishing' walls and routing wiring through false ceilings.

Test Equipment

- Define the job of certifying wired communications networks
- Describe Bit Error Rate test equipment (TBerD, etc.); toners and OTDRs
- Demonstrate proficient use of an OTDR to troubleshoot cabling problems and to verify installed cable

Troubleshooting

- Demonstrate proper usage of telephone test equipment as well as common DVM's, signal tracers and



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- sources, oscilloscopes and loop and network testing equipment
- Describe “Last Good, First Bad” troubleshooting methods and loop testing

Transmission Protocols

- Modulation schemes

Telecom Mathematics

- Work math problems as required in telecommunications service and installation work

Optical Wiring

- Safety-demonstrate the rules for disposal and eye safety when working with fiber optics equipment
- List different parameters and reasons for choosing each type of optical cable
- Describe the conversion process from copper to fiber signals
- Define and explain the term SONET
- Explain DWDM, Dense Wave Division Multiplexing

Wireless Telephony

- Give an overview of the differences between wired telecommunications and cellular networks.
- Describe the concepts and architectures of cellular telephone systems
- Define Spread Spectrum broadcasting techniques



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- Explain TDMA and CDMA modulation
- Give a description of how Paging Services operate
- Explain the principles of telephone communications via satellites
- Describe the major components of satellite uplink and downlink systems