

NASSAU BOCES - ADULT EVENING PROGRAM
Joseph M. Barry Career & Technical Education Center
1196 Prospect Ave.
Westbury, NY 11590

COURSE OUTLINE

Course Name: **Network Cabling (Part I) Introduction to the Physical Layer**
Weeks: 6.5
Sessions: 13
Days/Time Mon/Wed, 7-10 pm
Instructor: Dave Lambert
Required Supplies: Copper Cabling Kit – Cost tba
Prerequisites: None
Adult evening Office: (516) 622-6950

Course Overview:

Students will learn how to terminate, test and troubleshoot copper and fiber-based network wiring and cabling as well as the theory behind each system.

Certifications:

C-Tech Network Cabling Specialist Certification, 78 hours. Requires Network Cabling (Part I and II).

Course Topics

Session 1 Nassau BOCES paper work for new students, Certification requirements, Course goals and objectives, The ACT, Data and voice train kits, foreign voltage, cable supple, jumpers, pins, tips & ring, banner board , introduction to tools, test adapters, known good cables & testing, student consumable kit, how textbook is set-up, classroom demonstration the speed of light cabling presentation from C-TECH. What students can & can not do.

Session 2 Twister pair cabling systems, Plenum and Riser cables, 4-pair UTP cables, Color codes, hands on activity pair to pin configuration 568A, 568B and USOC, patch cords, 8P8C modular plugs, straight through cables, rollover cables, crossover cables, modular jacks, wire mapping, termination methods, 66-type block, 110 block, Krone block, BIX block, unit review, unit test, certification test 1 & 2.

Session 3 ScTP, STP, punch down tool & blades, striping techniques, punch downs to blocks, 25 pair color code, terminating 25 pair, terminal blocks, Patch panels, hands on activities, wire layout, module review, module test and certification test module 3.

Session 4 Safety, OSHA, Hazardous materials, Fall prevention and protection, ladders, scaffolding, Fire protection, Building codes and requirements different types of cables, Lighting protection, grounding, bonding, electricity, ohms, volts, amps, direct current, alternating current, Introduction to troubleshooting. Reading LEDs, Module review, hands on activity, module test, and certification test 4

Session 5 Constructing/testing 4-pair cabling systems, modular connectivity, deciphering Data and voice cable test codes, reversal. Open/shorts, split pair, transposals, dual lighting of LEDs, Testing shielded systems, Wire conditions, Wire mapping conditions, tools safety, stripping twisted pair, crimping twisted pair, hands on activities, module review, module test, certification exam 5.

Session 6 Connectivity Testing, testing opens and shorts, testing for reversals, testing transposals, testing split pairs, testing combination wiring schemes, Data & voice responses, hands on practice, module review, module test 5, certification test

Session 7 Troubleshooting/Punch down of 4-pair cabling systems with 66 block & 110 block, troubleshooting guide lines, troubleshooting worksheet, battestar troubleshooting, battle cables, testing between pairs, blocks and patch panel, simulating cable runs, planning, diagramming, Software demo, tone & trace, tone & trace testing, tone & trace troubleshooting, patch panel tone & trace tools. Hands on activities, module review, module test, and certification quiz's 1, 2, and 3.

Session 8 Coaxial cable, cable modems, satellite T.V, Local area networks, types of coaxial cables, Coaxial connectors, BNC, F-type, 3-blade wire stripping, Hands on activity, student practice, cable crimping coaxial, compression tool, terminating and testing of f-type, BNC cables, Quad shield coaxial cable, coaxial specifications distance, speeds, megahertz, module review, module test, certification test.6

Session 9 Commercial cabling topologies & standards, OSI model, IEE 802 project, Wiring standards, NEC Code, The six sub systems, Entrance facilities, backbone cabling, telecommunication room, equipment room, horizontal cabling, work area, Environmental issues, harsh environments, Mandatory & advisory terms and codes, telecommunications symbols, labeling, identifying telecom symbols and labels, building a small LAN, hands on activities, module review, module test, module quiz 4 and 5, certification test

Session 10 Residential Cabling topologies & cabling standards, residential cabling, structured cable, single residence cabling, Elements of residential cabling, gateways, auxiliary disconnect outlets, outlet cabling, outlets, work orders, reading work orders, estimating the job, module review, module test, certification quiz, certification exam 7 & 8.

Session 11 Placement of copper cable systems residential & commercial, planning, preparation, safety, ladder safety, pulling, pulling more than one, bundles, Walls, fire stopping, terminating, testing, abandoned cable, hands on pulling, testing & terminating, module review, module quiz, module test and certification exam 9.

Session 12 Testing troubleshooting copper based cabling systems, what do we test, attenuation and noise, analog and digital signals, binary code, insertion loss, return loss, dealing with cable noise, Signal to noise ratio, types of noise, propagation delay and delay skew, the three step process, consolidation points, testing channels, testing a permanent link, copper cable performance testing, hands on activities, module review and module testing and certification review

Session 13 Local Area Networks, computers, networks, Ethernet, Ethernet addressing, Ethernet standards, broadband, baseband, hybrid networks, wireless networks, PANs, 802.11 WiFi standards, Bluetooth, spread spectrum technology, Security, VoIP, Module review, module test, module certification exam, C-TECH NCS certification exam parts 1, 2 & 3. All papers collected, mail certified mail to C-TECH. Program ends.

Additional topics can be added threwh the program as C-TECH up-dates are provided.