

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 2) Introduction to Fiber Optic Connectors**
Weeks: 6.5
Sessions: 13
Days/Time: Mon/Wed, 7-10 pm
Instructor: Dave Lambert
Required Supplies: Fiber Cabling Kit – Cost tba
Prerequisites: Network Cabling (Part I)
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, Fiber Optic concepts, Light communications systems, metric systems, typical fiber optic cable, transducer, elements of an optic systems, Activities 1.1 to 1.4, history of light wave communications, characteristics of light, propagation of light, attenuation of light, macrobending, dispersion, dispersion of light, module review, Fiber presentation from Dow Corning, module quiz, module exam, module certification exam.

Session 2 Fiber Optic cabling, new terms, safety, manufacturing process, the speed of light, parts of a fiber optic cable, the cone of acceptance, stepped index and graded index, main types of fiber optic cable, continuity testing, hands on activities 1.5 to 2.5 (6 total hands on task), module review, module test, module certification exam

Session 3 Introduction to the SPOT, Reading the SPOT, Continuity testing using the SPOT, stripping light grade building cable, Using the C-TECH fiber optic card, The fiber optic color code, National electric code and fiber optic cables, Plenum, Riser and General purpose cabling, Fiber cable identification substitution, module review, Hands on activities 2.6 to 2.7, module quiz, module test, certification test.

Session 4 Sources and Detectors, operating characteristics of sources, The LED, Lasers, Diodes, Laser diodes, important safety consideration when using lasers & diodes, comparison of two types of fiber optic sources, optical detectors, TDRFM, optical detectors, types of PIN diodes & APD, dispersion and its effects, electrostatic discharge, advantages & disadvantages of fiber optic systems, module review, module test, hands on activities 2.8 to 4.0, module certification exam.

Session 5 Fiber Optic termination workstation, tools, set-up, steps in termination, tools care and usage in termination, What's inside the student workstation, Fiber optic microscope, Using the optical tester, buffer tube stripper, light guide building cable jacket cutter, Patch cord jacket stripper, patch cords, universal crimper, scribe,

polishing puck steps for polishing, polishing paper, scissors, optical cleaving puck, cable pulling jig, module review, module hands on activities, module test, certification exam.

Session 6 Single mode termination steps & demo, installing fiber optic connectors, connectorizing ST connectors, connectorizing SC connectors, Activities 4.1 to 5.3 (1 hour 15 minutes needed), module review, module test, Hands on certification test part 1, certification test written.

Session 7 Identification and explanation of remaining components of the fiber optic systems, popular connectors, small form factor connectors, variations in termination, crimp & cleave connectors, thread lock method, fiber optic adapters, fiber optic splices, fiber optic closures, mechanical splicing, assembling the splice, testing the splice, attenuation levels of the splice, module review, module hands on activities 5.3 to 6.0, module test, module certification exam.

Session 8 Fiber optic cabinets, fiber optic outlets, cabling topologies, standards, Fiber optic sub systems, Entrance facilities, backbone cabling, telecommunication room, equipment room, horizontal cabling, work area, Environmental issues, harsh environments, Mandatory & advisory terms and codes, fiber optic telecommunications symbols, fiber optic labeling methods, end to end identification. Hands on activities 6.1 to 7.2, module review, module test, module certification exam

Session 9 Fiber optic residential cabling topologies and standards, cable grades, smart home, elements of residential cabling systems, gateway, the auxiliary disconnect outlet, outlet cabling outlets, topology design, structure, planning, tools, software, cabling distances, multi-tenant residences, the entrance facility, backbone fibers, floor servicing and terminal, distribution device and ADO, job estimating, material cost, ISP connection, module hands on activities 7.3 to 8.2, module review, module test, module certification exam

Session 10 Recommend cables, cable advantages and disadvantages for distance connections, cable placement, preparation, attaching to a LAN, attaching to Business Attaching to WAN, Fiber optic network hardware, attaching a cable to a mesh grip and swivel, placing & pulling methods, Replacing fire blocking materials, terminating multi-mode cables, testing, hands on activities 8.3 to 9.4, module review, module test, module certification exam.

Session 11 Testing troubleshooting fiber optic cabling systems, light source and power meter, testing using a mandrel, taking power loss measurements, calculating loss and formulas', active and passive parts of the fiber optic systems, dynamic range, fiber optic loss budgets, calculating a fiber optic loss budget, testing procedures, testing methods, common problems and solutions, hands on activities 9.5 to 10.3, module review, module test and module certification exam.

Session 12 Fiber optic data and understanding packets and data grams, TCP/IP stack, protocols, routing, Routing and remote access, time management, the cabling specialist, soft skills, oral skills, written skills, module review, module test, module certification exam.

Session 13 C-Tech 3 hour Fiber-Optic Network cabling certification hands on exam parts 1, 2 & 3 and written exam, Certification paper work collected mailed to C-TECH for evaluation and certification. Program ends