Certified FTTH Professional

Intermediate

Our Certified Fiber to the Home Professional (CFHP) course is available as either a self-guided online study course or as in-person training. It is designed for those involved in deploying and maintaining FTTH and FTTB networks. Students will gain a broad base of knowledge and familiarity with FTTH architectures, network design, deployment technology, and operational skills.

Audience: Network designers, network planners, supervisors, and project managers

Prerequisite: Fiber Foundations is recommended, but not required.

CFHP Online Training

This interactive online course features 16 modules that offer a broad base of knowledge around FTTH architecture, network design, deployment technology, and operational skills. These topics include:

- Bandwidth and economic issues
- Evolution of FTTH networks
- Basic fiber optic theory
- FTTH architectures and topologies
- Network components
- Fiber and cable management
- Termination options
- Network design
- Loss budgeting
- Test equipment and procedures

Ideal for remote and international students looking for the comprehensive material found in our CFHP instructor-led course, without the added expense of travel.

CFHP Instructor-led Training

This two-day instructor-led course focuses on the fundamentals of FTTH architectures, network design, deployment technology, and operational skills. It covers everything from FTTx systems to components, including discussion around the business issues involved with planning FTTx deployments.

Credentialing

FiberBroadband ASSOCIATION

Fiber Broadband Association Certified Fiber to the Home Professional

Valid for three years.

Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.

Click or scan for detailed course information and upcoming training locations.

"An invaluable addition to our knowledge base especially with future planning."

—Brian Perch, Cable & Wireless Barbados, Ltd.

Light Brigade®

For training, tools, or equipment:

1 (206) 575-0404 • 1 (800) 451-7128 • lightbrigade.com

Certified Fiber to the Home Professional

Detailed Course Outline

Light Brigade®
FIBER OPTIC TRAINING

This course features 16 hours of classroom lecture with an experienced FTTH instructor. Students will gain a broad base of knowledge and familiarity with FTTH architecture, network design, deployment technology, and operational skills. The course is intended for network designers, network planners, supervisors, and project managers that will be involved in deploying and maintaining FTTH and FTTB networks.

Prerequisites: This class requires knowledge of fiber optic theory and terminology.

Certifications and Credits: Fiber Broadband Association Certified Fiber to the Home Professional (CFHP)
Light Brigade Digital Credentialing

Applications

- Planning and design of the FTTH network
- Fiber optic transmission
- Today's applications
- Fiber to the home
- Fiber to the business/building
- Business needs
- Drivers behind FTTx
- The evolution of FTTx
- TPON (telephony PON)
- Fiber to the curb
- Cable television
- Radio frequency over glass

Bandwidth Issues

- The demand for bandwidth
- Technology in transition
- Analog to digital video
- SDTV and HDTV
- Over the top video
- IP video delivery
- Interactive technologies
- High bandwidth users
- Cloud computing and storage
- Cell towers
- Smart grid and energy management
- Future trends
- ODN capabilities
- User density

Economics

- Defining CAPEX and OPEX
- FTTH and FTTB CAPEX items
- Design impacts
- Who's implementing FTTH?
- Triple play network characteristics
- Cost comparisons
- Migration path considerations
- FTTH and FTTB OPEX items
- Power
- Network management systems
- Mean time between failure
- Maintenance issues
- Operations software
- Interface software
- Quality of service
- OPEX and CAPEX costs

Theory and Fibers

- Attenuation
- Causes for intrinsic and extrinsic losses
- Dispersion
- Fresnel reflection
- Lightwave transmission
- Single-mode fiber characteristics
- Single-mode fiber with laser source
- Mode field diameter
- ITU-T single-mode fiber types

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FTTH Standards

- System standards
- TCP/IP
- MPEG – IPTV
- Active Ethernet
- Full service access network
- Broadband PON
- Dynamic bandwidth allocation
- Asynchronous transfer mode (ATM)
- Gigabit PON
- Ethernet PON
- RF video overlay
- DOCSIS
- Radio frequency over glass
- 10G-PON and XG-PON
- IEEE 802.3av 10GEPON
- NG-PON2
- 40 GbE and 100 GbE
- Telcordia generic requirements
- Physical layer standards
- ITU-T standards
- Outside plant standards
- North American codes
- TIA-568 and TIA-569
- POLAN

Network Topologies

- Physical topologies
- Point-to-point topologies
- Star and PON star configurations
- Reach extension
- Route redundancy
- Ring, mesh, and bus topologies

Network Components

- Erbium-doped fiber amplifiers
- Photodetectors
- OLTs and ONTs
- Coarse, wide, and dense WDM
- Filters and gratings
- Diplexers, triplexers, and quadplexers
- Splitters
- Planar lightwave circuits
- Optical bands and windows
- Wavelength allocations

Cables

- FTTx distribution and drop cables
- Outside plant cables
- High fiber count cables
- Aerial fiber optic cables
- Indoor/outdoor cables
- Distribution cables
- Plenum, riser, and LSZH cables
- Fiber optic cable cordage
- Fiber and buffer color codes

Cable Management

- Fiber optic interconnect hardware
- Outside plant cable management
- Patch panels
- Splice panels
- Optical entrance enclosures
- Distribution panels
- Fiber distribution hubs
- Pedestals
- Vaults and handholes
- Splice closures
- Multiport service terminals
- Fiber transition terminals
- FTTB panels
- Cabinets for active Ethernet
- Cable and slack storage
- Panel and closure issues

Cable and Fiber Termination

- Managing termination costs
- Traditional splice scenarios
- Drop cable splicing
- Extrinsic splice and connection attenuation
- Fusion and mechanical splicing
- Ribbon splicing technology

- Pigtail splicing
- Splice protection
- Main connector components
- Fiber optic connector polishes
- Common FTTx connectors
- Hardened connectors
- Small form factor LC connectors
- Multifiber connectors
- Field terminable FTTH connectors
- Fiber optic cleaning methods
- Attenuators and terminators

Splitter Placement

- FTTH planning
- Take rate
- Growth strategies for PON
- Migration strategy
- Splitter flexibility
- FTTH design engineering
- Rural applications
- Slack storage
- MDUs and MTUs
- Outdoor splitter and hub locations

Network Design

- Designing FTTx systems
- Selecting a transmission protocol
- Proper route planning and engineering
- Active Ethernet P2P networks
- Growth and migration strategies
- FTTH outside plant design
- Splitter location
- FTTH home run management
- FTTH centralized splitter management
- FTTH distributed topology
- Sales and construction planning
- Writing OSP specifications
- Fiber management specifications
- Cable mid-entry planning
- Specifying termination options

Fiber to the Building

- MDU and MTU variations
- Telecommunications rooms, closets, and enclosures
- Backbone hierarchical star topology
- MDU installation and termination
- FTTB using POLAN
- End user locations and aesthetics
- Optical network terminals and access points

Loss Budgets

- Impacts on signal quality
- Loss budgets for FTTP networks
- Fiber, splitter, and WDM specifications
- Active components
- Active Ethernet
- PON classes
- Class B+ and C+ specifications
- Differential optical path loss
- PON loss budgets
- “Not to exceed” charts
- PON specifications
- RFoG loss budgets
- Tapered loss budgets
- Reach extension

Test Disciplines

- Network tests and equipment
- Testing active Ethernet and PON systems
- Optical loss testing
- OTDR testing
- Splitter signatures
- Reflection testing
- Visual inspection
- Documentation
- Troubleshooting with a visual fault locator
- Troubleshooting PON and AE systems
- System test points
- System related problems
- Eye diagrams
- Service activation testing