

Fiber Optic Technician Course

Course Overview

Fiber Optic course is designed for anyone interested in becoming a Fiber Optic Technician. This course combines theory and hands-on activities.. The course also introduces the participant to industry standards governing outside plant and premises fiber networks. Upon successful completion, this certification is recognized by many companies all over the world including customers and installers.

Course Objective

Participant will be able to effectively and efficiently design, install, terminate, and test multimode/single mode fiber optic networks.

Target Audience

IT Managers, Telecommunication Engineers, Voice, Data and Video (VDV) and FTTx Technicians.

Course objectives

At the end of this training the participants should be able to

- Determine the type of fiber optic cables for various purposes
- Splice fiber optic cables
- Effectively use a splicing machine
- Use optical power meters
- Be conversant with the OTDR
- Be able to interpret OTDR traces

Course Outline

- Introduction to Fiber Optic Technology
 - What is fiber optics?
 - Definition of terms
 - Fiber optic networks – Passive Optical Networks and Point-to-Point Optical Networks
 - Refraction in fiber optics
 - Reflection in fiber optics
 - Scattering and absorption in optical communication systems Dispersion in optical communication systems
 - Numerical aperture Mode field diameter
 - Frequency spectrum in fiber optic systems
 - Multiplexing techniques used in fiber optics (WDM and DWDM)
 - Standards and Codes used in fiber optics
 - Indoor Fiber Optic Cable Fire Rating
 - U.S. National Electric Code (NEC code)
2. Cable Installation and Laying Techniques
- Equipment and tools used in installation of fiber optic cables
 - Cable handling techniques
 - Cable installation in buildings- on trays, in conduits, and vertical installation
 - Cable installation techniques in ducts – blowing and pulling methods
 - Aerial installation of fiber optic cables
 - How to determine cable bend radius and cable tensile loads
 - Cable blowing
 - Fiber optic cable overhauling

Practical

Cable preparation – demonstration of loose tube cable sheath removal and fiber access

3. Splicing and jointing of fibre optic cables

- Splicing and cable jointing
- Fibre optic losses due to splicing-splice loss, intrinsic loss and extrinsic loss
- How to detect splice loss
- Splicing safety, parts and tools
- How to replace a cable for splicing.

Practical

- i. How to clean, prepare and cleave fiber
- ii. Splicing of fiber – fusion of single-mode fiber with v-groove and core alignment machines
- iii. Evaluation of the connector end-face using a microscope

4. Testing and troubleshooting of fiber optic systems

- Equipment used for testing fiber optic cables
- Basic field tests/ measurements
- Types of fiber faults
- Troubleshooting of fiber faults
- How to test patch leads, transceivers and mid couplers
- Cutback and insertion loss methods of measurement of field loss attenuation
- Measurement of scattering losses
- How to measure cutoff wavelength
- Time domain and frequency domain measurements of fiber dispersion
- Emergency restarting procedures

Practical

- i. The OTDR
- ii. Measurement of losses using the OTDR
- iii. Interpreting OTDR traces
- iv. Using a light source and meter to measure jumper attenuation loss

Tools and Equipment to be used

- OTDR
- Splicing Machine
- Optical talk set
- Optical power meter
- Fiber viewer
- Spectrum analyzers
- Fiber analyzers
- Polarization