

CERTIFIED FIBER OPTIC TECHNICIAN CFOT

Course Description

This accredited and certified Fiber Optics course is designed for anyone interested in becoming an engineer in Fiber Optic technology with the ability to handle the various technical areas of installation leading to the award of CFOT from FOA. This program combines both theory and practical exercises with the use of relevant software in designing proposed fiber route and implementation. The skill to be acquired in this course centered on: Installation, Termination, Splicing, Testing & Documentation among other skills.

Pre-requisite

The course can be taken by a new student to the skills of computer networking & engineering. Enrollment is restricted to people with the ability to read & write in basic English Language and it is ideal for anyone who is to be employed as Fiber Optic system analysts & also telecommunication professionals, electronics, electrical and mechanical, Marine & Oilfield engineers. Every training is assumed as a one-on-one hand on practical. Students must be ready to study individually or in group sharing tools & work theory.

Objective

At the end of this course you will learn & understand the history and operation of Fiber Optics, Terminate a variety of connector, Perform Fusion Splicing and Mechanical Splicing, Perform Cable Preparation for Fusion, Assemble a Splice enclosure, Fully test and troubleshoot Fiber Optic cables and Fiber Optic Systems using an Optical Time Domain Reflectometer (OTDR), Fiber Optics Networking Standards, learn FOA-CFOT, BICSI and RCDD Certification, Fiber Optics Cable and Connector Identification, Outside Plant Cable Introduction, Termination of Fiber Connector, Splicing (Mechanical & Fusion), Design & Installation of Fiber Cabling, Outside Plant Fiber Cable preparation, termination & testing, Introduction to Basic OTDR Functions, & so much more about power of FOA.

1.INTRODUCTION TO FIBER OPTICS:

- a. Brief history.
- b. Definition. c. Advantage of fiber optics transmission over copper, coaxial and radio frequency.
- d. Preparation/manufacturing of fiber optics cables.

2.HEALTH AND SAFETY RULES OF FIBER OPTICS INSTALLATIONS:

- a. Health and safety execution (HSE) under TIA/EIA regulation.
- b. Warning signs
- c. Safety equipment

- d. Electrical safety
- e. Confined spaces

3. FIBER DESIGN/WORKING PRINCIPLES:

- a. Core, cladding, buffer coating or primary coating and Strength members.
- b. Reflection, Refraction and Refractive index.
- c. Critical angle and total internal reflection.
- d. Fiber types: All plastic (P.C.S. and H.C.S. All glass (Step index MM, Graded index MM and Single mode)
- e. Numerical aperture(NA)/ Acceptance Cone
- f. Mode Field Diameter MDF: Defines the size of power distribution through the core /Cladding of the fiber.

4. OPTICAL NETWORK:

- a. Definition of what a fiber optic network is.
- b. Transmitters/Light sources (LEDs, VCSELs & LASER)
- c. Optical fiber parameters Wavelength Frequency WDM
- d. Fiber optics amplifiers EDFAs (erbium doped fiber amplifiers) Raman amplification
- e. FO Attenuators: Types and Uses
- f. Windows/operating wavelength

5. CABLING

CABLE TYPES

- a. TIGHT BUFFERS : Distribution cables, Breakout cables
- b. LOOSE TUBES :Ribbon cables, Armored, OPGW cables
- c. Hybrid and Composite cables

CABLE SELECTION SPECIFICATION

- I. Installation Specification
- II. Environmental Specification

CABLE RATING

- I. Plenum Area
- II. Risers
- III. General Purpose

6. FIBER CONNECTORS

a. TYPES

- I. ST Connectors
- II. LC Connectors
- III. FC/RC Connectors
- IV. SC Connectors
- V. MT/RJ

b. Termination Procedures

1. Adhesive Termination Epoxy/polish, Hot-Melt, Anaerobic Adhesives, Acrylic
2. Crimp/polish
3. Prepolished splice

c. Polishing Techniques

The Flat Finish, Physical Contact (PC),Angled Physical Contact (APC)

7. SPLICING

- a) Definition
- b) Types: Mechanical/Fusion
- c) Choosing a splice type
- d) Step by step splicing Process
- e) Splice Losses; Cause and Remedies

8. FIBER LOSSES

- a) Definition
- b) Types/kinds of losses in fiber optics links
 - a) Attenuation (Rayleigh scattering, Absorption and leakages)
 - b) Dispersion(modal,chromatic and PMD)

Loss budget in a fiber optic link.

9. OPTICAL FIBER COLOUR CODE

- a) TIA/EIA Standard
- b) Installation processes

10. CABLE PLANT HARDWARE

- a) TIE/EIA Standard
- b) Splice organizers and splice trays
- c) Splice enclosures
- d) Splice panels
- e) Racks and cabinets

11. TESTING AND DOCUMENTATION

- a) Visual fault tracing
- b) Visual fault locator
- c) Visual connector inspection
- d) Optical time-domain reflectometer (OTDR)
- e) OTDR limitations
- f) Optical power loss(absolute and relative test)
- g) Measuring Power
- h) Testing Loss(single ended loss and double ended loss)

Course Fee

N110, 000 covering training, Practicals and CFOT Certification exam