



Certified Fibre Optics Technician (CFOT)

COURSE DESCRIPTION:

The Fiber Optic Association (FOA) "Certified Fibre Optic Technician" (CFOT) qualification course is a balanced mix of hands on instruction and theory to provide the essential knowledge and skills required for anyone working with fibre in today's mobile and fixed telecommunications networks, office LAN's, Enterprise & Utility networks (Power, Water, Oil & Gas, Rail, Electrical, Construction etc.) Industries. The certification is internationally recognized and is intended to provide the theory of fibre, safety, handling and cleanliness, the hands on experience to prepare cable, splice fibre and loom and label enclosures, and the practical testing skills to commission and fault find installations, including hands on use of an Optical Time Domain Reflectometer (OTDR). This is a must-have qualification for anyone working within or with aspirations to work with fibre optics.

To gain the Certified Fibre Optic Technician qualification, you are required to complete three course modules, be competent in hands on exercises and pass the final exam.

Module 1: An Introduction To Fibre Optics (Day 1)

The Basics

- The basics of Data, Binary, Bits & Bytes, ACCII, Speed, What is Fibre, Components, Standards

Fibre Optic Standards Bodies

How Optical Materials Work

- Properties of Light, Guiding Light in a Physical Material, Refraction Index, Snell's Law, Total Internal Reflection

Principles and Technology of Fibre Optic Manufacturing

- How the manufacturing process impacts of specification of fibre optics, Impurities, Reflection, Scattering and Loss

Physical Specifications

- Geometry, Attenuation, Bandwidth, The Development of the OM1/2/3/4 and OS1 Specifications



Optical Fibre Specifications

- Singlemode, Multimode, ITU and EIA Variants

Optical Safety Considerations

- Working with Lasers, Identification of Laser Hazards

How Fibre Optic Links Work

- Analogue to Digital Conversion, Types of Lasers, LEDs, Transmit and Receive Margins, Power Budgets

Fibre Optic Links

- Point-to-Point, Point-to-Multipoint, Media Converters, Wavelength Use, Transmission Specifications

Types of Fibre Optic Cable (FOC)

- Internal, Outdoor, Indoor/Outdoor, Breakout, D-Series, Patch-cords and Pigtails

Functions and specifications of Fibre Distribution Hubs/Cabinets (FDH)

- Cross connection, PON, traditional and air blown.

Fibre Optic Installation

- Internal, D-series, Breakout Cables, Cable Trays, FTTX Premise Cabling
- OSP Aerial, ADSS, Figure 8, Slotted Core, Centenary Wires and Lashing, Air Blown Fibre (ABF)
- OSP Underground, Direct Buried, Dielectric and Armoured Cables, Types of Ducting Systems, Air Blown Fibre (ABF)

Product selections

- Outside Plant Standards

Functions and Specifications of Optical Fibre Distribution Frames (OFDF)

- Cross-connect, Fusion Spliced, Single Circuit Management

Connectors in the Outside Plant (OSP) Environment

- Specifications, Reflection, Loss, Cleaning, Troubleshooting

Methods of Installation

- Underground only, Single Ended, Mid-point, Ducting, Pulling and Blowing



Manholes and Joint Closures

- Coiling, Management, Splice trays, Types of Closures, Direct Buried, Butt, In-line, Single Circuit Management, Single Element Management

PON, G-PON & the UFB

- TDM, WDM, Splitters, Amplifiers & ROADM

FTTX Networks

- Ethernet Final Mile (EFM) Networks, Passive Optical Networks (PON), WDM-PON Developments

Module 2: Fibre Optic Cable Jointing and Termination Methods (Day 2)

Fibre Optic Tools

- Jacket preparation, cutting, cleaving and marking/ identification

Practical

- Cable & Enclosure preparation

Fibre Optic Terminations and Splicing

- Types of Connectors, Factory-made Connectors, Field Installable Connectors, End-face Conditions and Cleaning

Terminating Connectors

- Using Field Installable Connectors, Splice-on Connectors, Hardened Fibre Optic Connectors (HFOC)

Splicing Procedures

- Fusion and Mechanical Splicing, Environmental, Cable Preparations, Cleaving, Types of Splice Trays

Practical

- Cable Preparation
- Fibre preparation
- Cleaning & Cleaving
- Pigtail splicing
- Splice tray looming
- FOSC splicing
- Connector Cleaning
- Labelling

- Sharps handling

Module 3: Fibre Optic Test and Measurement (Day 3)

Units of Measurements in Fibre Optic Networks

- Relative and Absolute Measurements, dB and dBm

Understanding Transmission Electronics and Power Budgets

- Link Loss Calculations, Determining Reach, Using Attenuators

Installation Testing and Documentation

- Using Visual Fault Locators, Light Source & Power Meters, Measuring Gain and Loss, Providing Commissioning and as-built Documentation

Understanding the Importance of Wavelengths

- Determining the correct wavelength to use for testing, Multimode and Single-mode testing

Determining Link Capability

- Continuity, Attenuation, Length, and Splice Losses

Basic Fibre Optic Test Equipment

- Video Scopes, Visual Fibre Identifiers, Power Meters/Light Sources, Live Fibre Identifiers, Visual Fault Locators

Troubleshooting of Connectors

- Visual Inspection of Connectors, Contamination, Proactive Cleaning Regimes

Troubleshooting of Fibre Optic Links

- Using Power Meter and Light Sources, Benchmarking, Using Multiple Wavelengths

Design and Function of the OTDR

- Time Domain Reflectometry, Properties of Light, Reflection Absorption and Loss, Uses of the OTDR

OTDR Troubleshooting Fibre Optic Links - Theory

- Recognising the Dead Zone, Connectors and Splices, Power Loss and Power Gain Events
- Using Test Leads and Launch Cables, Dynamic Range, Resolution and Ghosts
- The importance of Recording, Saving and Analysing Results

CFOT Exam completed at the end of Module 3

Optical Time Domain Reflectometer Operation (Day 4)

The principles of light (related to OTDR's)

- light velocity
- reflection
- refraction
- dispersion

Fibre Testing theory

- Dead Zones
- Insertion Loss
- Fusion Splices
- Mechanical Splices
- Connectors
- Ghosts & Gainers

OTDR Parameters

- Range
- Pulse Width
- Wavelength
- Averaging

Launch Cables

- Where and why we use them

OTDR Navigation

- OTDR setup and operation
- Connecting to a Fibre
- Basic OTDR results analysis and troubleshooting

Hands on fibre testing and fault location

- Advanced OTDR setup and operation
- Advanced OTDR results analysis and troubleshooting
- Test result storage and handover documentation



To find out more about this course, contact CoverTel Services on info@covertel.com.au or telephone **1800 COVERTEL** (1800 268 378)

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