

Hands-On

Essential Fiber Optics, Splicing, Termination & Testing



Course Description

This Fiber Optic course will give technicians a working knowledge of the various termination methods and testing procedures in the long haul, metro, and fiber to the home (FTTx) systems.

Completion of this course will give the technician an understanding of fiber optics and focuses on the equipment used to terminate, test, and troubleshoot fiber optic systems. This is a prerequisite course and an entry point to more advanced topics available in additional BTS Fiber Optic courses.

Our instructors have actual field experience and have faced the same obstacles as your team. Our Real World Experience allows us to provide the participants with the answers and the skills to overcome their daily challenges.



Students Will Learn

- **Understanding Optical Transmission**
- **Components of a Fiber Optic System**
- **What is WDM and uses in FTTx Applications**
- **Using an OTDR for Testing and Troubleshooting**
- **Power Meter and Light Source**
- **Connector termination methods and use**
- **Fiber splicing principles**
- **Understanding of fusion and mechanical splices**
- **Understanding typical Faults in a Fiber System**
- **Attenuation and Testing Loss**
- **Optical Return Loss**
- **Back Reflection**
- **Refraction**
- **Connector Inspection and Cleaning**
- **And More...**

Target Audience

Attendees are encouraged to bring any test equipment being used to the training, this can be an added benefit by incorporating your company's own type of equipment into the Hands-On labs during this training. BTS does provide some gear for the labs, but it is always best to get training on what you will be using.

Prerequisites

Attendees should have a basic understanding of telecommunications prior to taking this course. Basic Telecommunications training, as well as advanced Fiber Optic topics are available in additional BTS courses.

Course Outline

Module I: Fiber Optic Systems

- What makes a Fiber Optic Systems
- PON networks
- Principles of light and fiber optic transmission
- Light sources used in single-mode fiber systems
- Wavelengths used in fiber optics
- Fiber Classes used in optical systems

Module II: Testing Fiber Systems

- Understanding attenuation
- Causes of attenuation
- Testing attenuation at different wavelengths
- Understanding back reflection
- Understanding optical return loss (ORL)
- Fusion and Mechanical splice procedures
- Termination methods and connectors
- APC (Angled Physical contact) connector versus UPC connectors
- Loss budgets and power requirements
- Testing power levels

Module III: Test Meters Used in Fiber Systems

- Fiber Optic Safety
- Setup of the OTDR
- Analyzing OTDR traces
- Event loss and reflectance

Testing at different wavelengths
Measure fiber length, loss and back reflection
Measure distance to events
Interpreting PM and light source results
Using a visible light source (VFL)
Setup of the power meter and light source

Delivery Method

Instructor-Led with Numerous Hands-On Labs.

Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

3 Days