

# Fiber Optics for Utilities



## Course Description

This three-day class has been developed with 12 hours of classroom training and 12 hours of hands-on skills labs that provide the practical understanding and skills required to properly design, install, and maintain aerial and underground fiber optic systems in investor-owned and municipal power networks. Students will use the latest fiber optic technology and equipment to learn how to splice, terminate, test, and troubleshoot fiber-optic utility networks in order to increase deployment speed, network efficiency, system reliability and on-the-job safety as well as reduce operating costs.

## Course Level

Introductory to intermediate. Beginners to experienced fiber technicians find the class and extensive hands-on skills training beneficial.

## Course Options

Three days – Classroom lecture and hands-on exercises.

## COURSE FEES

- Three-day course \$1500
- Optional UTC Level 1 Exam
  - Member Rate \$175
  - Non-member Rate \$275

## Certification

Utilities Telecom Council



Complete the three-day Fiber Optics for Utilities course and pass the UTC Level 1 Technician certification exam. The UTC Level 1 Technician is designed for technicians installing utility-based fiber optic networks.

### Custom Utilities Course

A custom Fiber Optics for Utilities course can include UTC Level 2 and Level 3 certification exams.

### Classroom (12 Hours)

**Introduction to Fiber Optics**  
Standards and Terminology  
Fiber Optic Applications

**Fiber Theory and Optical Fibers**  
Basic Optical Theory  
Attenuation, Reflection, Dispersion  
Optical Fiber Types

**Fiber Optic Cable**  
Cable Design and Types  
ADSS and OPGW Cable  
Cable Preparation

**Connectors**  
Connector Components  
SC and LC Connectors  
Termination Techniques  
Inspection and Cleaning

**Splicing**  
Fiber Optic Cleaving  
Fusion and Pigtail Splicing  
Splice Protection

**Cable Management**  
Panels and Closures

**Installation Basics**  
Route Planning and Engineering  
Cable Handling  
General Guidelines

**Aerial Placement**  
Typical Pole Placement  
Aerial Installation Methods

**Underground Installation**  
Trenching and Plowing  
Conduits and Ducts

**ADSS Installation**  
Dry Band Arcing and Corona  
Travelers  
EHV Lines  
Low Voltage Lines

**OPGW Installation**  
OPGW Cable Design  
Existing Electric Tower Lines  
Equipment and Tooling  
Anti-rotation Devices  
Splicing Concerns

**Optical Testing**  
OTDRs  
Optical Loss Testing  
Testing Terminal Equipment

**Restoration**  
Typical Causes of Failure  
Restoration Planning  
Aerial Restoration  
Underground Restoration

**Safety**

**Active and Passive Devices**

**System Design**  
Loss Budgets

### Hands-on (12 Hours)

**Safety Practices**

**Station #1 – Handling & Installation**  
Cable Bend Radii  
Pulling Grip Installation  
Cable Storage

**Station #2 – Cable Preparation**  
Loose Tube/ADSS Preparation  
Mid-entry Loose Tube/ADSS  
OPGW Preparation

**Station #3 – Closure Preparation**  
Cable Entry and Retention  
Fiber Unit Routing  
Fanout Kits  
Slack Storage for Splice Points

**Station #4 – Splicing**  
Pigtail Splicing  
FuseConnect  
In-line Splicing

**Station #5 – OTDR Testing**  
Acceptance Testing  
Span Acceptance • Splice Loss  
Reflection Testing  
Emergency Restoration  
Troubleshooting  
Documentation / Records

**Station #6 – Optical Loss Testing**  
Link Loss Measurement  
Transmit and Receive Power  
Identifiers and Tracers  
Documentation / Records

*“The instructor and tech were both very professional and very knowledgeable. When asked they always provided answers and if [they did] not know right away, [they] found the answer. They also stayed late for extra help.” – Joel Edgardo Alfaro, GRUPA CABLE SULA*