WORKFORCE DEVELOPMENT

PROGRAM OVERVIEW



THE LEADER IN FIBER OPTIC SKILLS TRAINING

Program Information

According to the Fiber Broadband Association, it is estimated that around 205,000 additional fiber technicians will be required through 2029 to support the seismic growth of fiber optic networks. Technicians will be required to install, splice, and connectorize various types of cable, properly dress cables, and test and troubleshoot networks. Preparing new technicians requires structured and standardized training to instill theoretical knowledge and hands-on skills to prepare the candidate for real-world employment success.

There are many options for training the skills required. These range from online sources such as YouTube tutorials to on-the-job training, to formalized training options. But not all training methods result in a highly skilled technician. The curriculum should be traceable and validated by a third party, provide an engaging learning experience, and remain focused on the specific learning outcomes required for placement and success.

What Challenges Do We Face?

Challenge 1: Explosive growth in fiber optic industry verticals.

Challenge 2: The median age of line technicians, datacom technicians, and telecom technicians is 43-45 years old. As these technicians move on to management roles or retire, there are not enough skilled personnel entering the field to replace them. It is commonly agreed upon that for every five technicians that exit the industry, only one enters.

Challenge 3: Historically, many new entrants to these fields were the result of a family member bringing the next generation into the field. Over time, those relatives wanted a perceived better life for their younger family members and we saw a trend where fewer were encouraged into these fields.

Challenge 4: Over the past thirty years there has been a reduction in attracting new talent to lineman, telecom, and datacom technicians. In the mid-90s there was a shift in the K-12 education system where students were encouraged to pursue non-trade fields and earn a four-year college degree. This led to the reduction of trade class offerings as students were encouraged to follow a more academic path.

Challenge 5: Lack of awareness and attraction to opportunities and income levels in these fields.

How Can Workforce Development and K-12 Programs Help?

Beyond the traditional methods of job recruitment, there is a need for more innovative paths to attract new technicians. State and community colleges, K-12 education, non-profits, and veteran and correctional re-entry programs are ideal starting points. Light Brigade has developed a workforce development/education focus for licensing turn-key education curriculum and train-the-trainer programs to such institutions.

Ready to Build the Fiber Optic Workforce of Tomorrow?

The demand for skilled fiber optic technicians is not just a trend; it's a fundamental requirement for our increasingly connected world. By partnering with Light Brigade's workforce development programs, your institution can play a vital role in enabling this essential workforce, creating meaningful career opportunities and fueling the growth of the digital economy.





FIBER OPTIC WORKFORCE DEVELOPMENT

Credentials & Certifications

Industry Certifications

Workforce Development courses offer independent, third-party industry organization, fiber optic certifications demonstrating progressive competency in technical skills. Professional certifications confirm compliance to industry standards, enhance credibility, reduce turnover, and make learners more marketable in the competitive market.

















Digital Credentialing

Light Brigade has partnered with Credly to provide an easy way for our learners to share their fiber optic credentials. We understand that communicating your credentials in an ever-expanding online environment can be challenging. Representing your skills as a badge gives you a way to share your abilities online in a way that is simple, trusted, and can be easily verified in real-time. With over 35 years of experience preparing learners to become successful fiber optic technicians, we have earned the name recognition and respect of the industry as the authority in fiber optic training. A Light Brigade digital badge shows the world you have learned the knowledge and skills from a respected, credible source.



Fiber Optics 1-2-3

Foundational



This instructor-led course provides a fundamental understanding of fiber optics and the practical hands-on skills training required to install and maintain fiber optic networks. Perfect for those new to fiber or those looking to enhance their current skill set. The classroom portion is dedicated to theory and lecture, which allows students to gain knowledge of fiber technology and network components. Students then have hands-on skills training to learn and apply proper cable preparation, termination, splicing, and testing skills.

Audience: Field technicians, installers, IT support staff, engineers, field supervisors, OSP staff, maintenance techs, or technical sales staff

Prerequisite: Fiber Foundations is recommended, but not required.

Credentialing



ETA® International Fiber Optics Installer (FOI)

Valid for four years.



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.



Sumitomo Fusion Splicing Fundamentals Digital Badge

Complete this course and receive a Credly digital badge.

"They excelled in making fiber optics easy. You can't improve on perfection."

- Gabriel Hartman



Fiber Optics 1-2-3



Classroom Lecture

- Communication Basics
- Transmission Theory
- Optical Fibers
- Cable
- Fiber Optic Connectors
- Connector Endfaces
- Splicing
- Fiber and Cable Management
- Installation
- Test Equipment
- Optical Testing
- Emergency Restoration
- Actives, Passives, and Loss Budgets
- Safety Best Practices
- Wrap-Up and Review

Click or scan for detailed course information



Hands-on Skills Labs

Review of Safety Practices

Cable Preparation for Termination

- Prepare a stranded cable for installation into a closure.
- Prepare buffer tube for a splice tray.
- Prepare a fanout kit.

Splicing and OTDRs

- Clean the test port and all connectors of an OTDR.
- Modify typical OTDR settings to obtain a clear trace.
- Recognize and interpret events depicted by an OTDR.
- Use an OTDR to test and identify events in a span.
- Use a launch box to enable identification of events close to the OTDR.
- Strip and cleave an optical fiber.
- Modify splicer settings to obtain a high-quality splice.
- Perform arc calibration on a fusion splicer.
- Create fusion splices on various fiber construction types.

Connectors

- Prepare and install fuse-on connectors and mechanical splice-on connectors.
- Clean connector endfaces using wet and dry methods.
- Use inspection scopes to view a connector endface.
- Use a light source and power meter to measure loss on a mated connector pair.
- Use a visual fault locator to identify bends and breaks.

Optical Loss Testing

- Identify contaminated and damaged connectors.
- Use a light source and power meter to observe the effects of a macrobend and microbend on a fiber.
- Learn proper test reference methods.
- Create a loss budget for sample span of fiber.
- Measure optical loss for a span of fiber and compare to the calculated loss budget.
- Use a fiber identifier to detect active fibers.



Fiber Optics for Data Centers

Foundational



This foundational-level course has been developed with both classroom learning and hands-on skills labs, review, and certification testing.

The course covers the fundamentals of fiber optic communication, installation techniques, testing, and maintenance, with a focus on practical applications and industry best practices. Participants will engage in hands-on exercises to ensure they are prepared to address the challenges and opportunities presented in modern data centers.

The labs provide the practical knowledge and skills required to properly install and maintain fiber optic networks in data center environments. Students will learn how to splice, connectorize, test, and troubleshoot optical fiber networks to increase efficiency, reliability, and on-the-job safety, as well as reduce costs and downtime. Following the lab sessions, those who have chosen to pursue ETA certification will complete their ETA certification testing.

Audience: IT professionals, data center managers, network engineers, and technicians who are responsible for the design, implementation, and maintenance of fiber optic systems in data centers

Prerequisite: Fiber Foundations is recommended, but not required.

Credentialing



ETA® International Fiber Optic Technician-Inside Plant (FOT-ISP)

Valid for four years.



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.



Fiber Optics for Data Centers



Classroom Lecture

- Introduction to Fiber
- Fiber Optics Transmission Theory
- · Standards and Codes
- Safety Best Practices
- Optical Fibers
- Optical Cables
- Connectors
- Connector Endfaces
- Fiber Management Products
- Topologies and Connectivity
- Splicing
- Installation
- Test Equipment
- Optical Testing
- · Loss Budgeting
- Twisted Pair Copper
- Wrap-up and Review

Click or scan for detailed course information



Hands-on Skills Labs

Review of Safety Practices

Cable Preparation for Termination

- Identify fiber optic cable and jacket types.
- Prepare cable for installation into a fiber panel.
- Prepare a fanout kit.

Testing

- Inspect and identify connector contamination.
- · Clean connector endfaces using wet and dry cleaning methods.
- Clean connectors using commercially available fiber optic cleaning products.
- · Identify damaged connectors.
- Use an optical loss test set to observe the effects of macrobends and microbends.
- Learn proper test reference methods.
- Measure optical loss for various data center connector types and polarity schemes.
- Use a fiber identifier to detect active fibers.
- Test copper twisted pair assemblies to industry requirements.

Splicing and OTDRs

- Clean the test port and all connectors of an OTDR.
- Modify typical OTDR settings to obtain a clear interpretable trace.
- Recognize and interpret events depicted by an OTDR.
- Use an OTDR to test and identify events in a span.
- Use a launch box to identify events close to the OTDR.
- Strip and cleave an optical fiber.
- Modify typical splicer settings to obtain a high-quality splice.
- Perform arc calibration on a fusion splicer.
- Create fusion splices on various fiber types.

Connectors

- Prepare and install a mechanical splice-on connector and a fuse-on connector.
- Inspect and clean fiber connector endfaces.
- Use a visual fault locator to identify nearby bends and breaks.
- Prepare and terminate shielded and unshielded copper twisted pair cable.



ABF for Installers and Technicians

Foundational/Intermediate

This foundational/intermediate level instructor-led course focuses on air blown fiber (ABF) construction, installation, and maintenance practices.

Aimed at anyone working with air blown fiber, the course starts with a review of fiber basics before getting into the details of microduct pathways and installation, tooling and consumables, different types of air blown cable and units, setting up blowing machines, pre-blow tests, blowing of cable, and troubleshooting. The course explores not only point-to-point blowing, but special conditions blowing such as maintenance loops, overblowing, tandem, onward, and center blowing techniques.

Various interactive exercises will be incorporated into the classroom theory part of the course to prepare students for the more in-depth hands-on skills portion of the course that will follow.

While the primary focus of the content is presented with the OSP in mind, the same principles equally apply to indoor applications such as MDU, hospitality, and commercial buildings and campuses.

Audience: Installers, OSP technicians, field supervisors, project managers, and designers

Prerequisite: Fiber Foundations and either Fiber Optics 1-2-3 or OSP for Installers and Technicians is recommended, but not required.



Credentialing



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.



ABF for Installers and Technicians



Classroom Lecture

What is Air Blown Fiber?

- · ABF terminology and applications
- Elements of an ABF network

Transmission Theory

- Digital communications
- · What is an optical fiber?
- · Standards and codes
- Attenuation and loss
- · Single-mode fiber

Cable and Connectors

- Cable designs and types
- Color coding
- Fiber optic connector types
- Fiber optic connector inspection

Splicing

- Fiber cleaving
- Fusion splicing
- Ribbon splicing

Cable Management & Installation

- Fiber and cable management
- Underground installation techniques
- Proper route planning & engineering

Testing and Troubleshooting

- Optical loss test sets
- Optical time-domain reflectometers
- Visual inspection
- · Reference testing
- Testing fiber optic splitters

Safety

- Personal protective equipment
- Visual safety
- Safe cable handling
- Installation safety

Duct and Microduct

- Pulling vs. blowing
- Duct pulling methods
- · ABF aerial placement

Cable, Tooling, and Installation

- ABF cable management products
- Blown fiber cable types
- Microduct preparation
- Coiling methods

Blowing Optical Fiber

- Blowing quality
- · Point-to-point blowing
- Sub-ducting/relining
- · Air blown fiber troubleshooting

Special Conditions

- Overblowing
- Tandem blowing
- Onward blowing
- Center blowing

Blowing Safety and Shutdown

Shutdown/breakdown

Wrap-up and Review

Hands-on Skills Labs

Review of safety practices

6-bar compressor hooked up.

- Clean the test port and all connectors of an OTDR.
- · Connect duct links using quick-fit connectors.
- Perform an airflow test (must be > 20L /min).
 Perform a pressure test with end stop safely installed and
- Perform a continuity test (2.6mm steel pellet, with catcher at far end).
- Perform sponging with catcher.
- Install the correct seals on the blowing machine.
- Install a 4F blown fiber bundle.
- Remove the blown fiber bundle and recoil into the pan.



Broadband Fiber Optic Technician Level 1

Foundational



This foundational level instructor-led course is comprised of an introduction to broadband FTTH theory and fiber followed by hands-on skills training to apply that theory to practical tasks. Completing the prerequisite Fiber Foundations online short course will prepare learners to enter this class with a basic understanding of fiber optic principles.

Areas of focus are FTTH and PON methodologies, topologies, optical distribution networks, cable management and installation practices, testing and maintenance, optical cable types, connectorization, splicing methods, and safety best practices.

Learners that complete this course will earn Credly digital badges for Light Brigade course completion and Sumitomo Fusion Splicing Fundamentals, and will be eligible to sit for the ETA Broadband Installer (BFI) credential exam.

Credentialing



ETA® International Broadband Installer (BFI)

Valid for four years.



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.



Sumitomo Fusion Splicing Fundamentals Digital Badge

Broadband Fiber Optic Technician Level 1



Classroom Lecture

- Introduction
- FTTx/PON Methodology
- Topologies
- ODN and OSP
- Fiber Theory
- Fiber
- Cable
- Fiber Optic Connectors
- Splicing
- Fiber & Cable Management
- OLTs and ONTs
- Installation
- Testing
- Maintenance
- Safety Best Practices
- Wrap-up and Review

Click or scan for detailed course information



Hands-on Skills Labs

Review of Safety Practices

Cable Preparation for Termination

- Prepare a stranded cable for installation into a closure.
- Prepare buffer tube for a splice tray.
- Prepare a fanout kit.

Splicing and OTDRs

- Clean the test port and all connectors of an OTDR.
- Modify typical OTDR settings to obtain a clear trace.
- Recognize and interpret events depicted by an OTDR.
- Use an OTDR to test and identify events in a span.
- Use a launch box to enable identification of events close to the OTDR.
- Strip and cleave an optical fiber.
- Modify splicer settings to obtain a high-quality splice.
- Perform arc calibration on a fusion splicer.
- Create fusion splices on various fiber construction types.

Connectors

- Prepare and install fuse-on connectors and mechanical splice-on connectors.
- Clean connector endfaces using wet and dry methods.
- Use inspection scopes to view a connector endface.
- Use a light source and power meter to measure loss on a mated connector pair.
- Use a visual fault locator to identify bends and breaks.

Optical Loss Testing

- Identify contaminated and damaged connectors.
- Use a light source and power meter to observe the effects of a macrobend and microbend on a fiber.
- Learn proper test reference methods.
- Create a loss budget for sample span of fiber.
- Measure optical loss for a span of fiber and compare to the calculated loss budget.
- Use a fiber identifier to detect active fibers.



Broadband Fiber Optic Technician Level 2

Intermediate



This intermediate level course is comprised of blended advanced broadband theory topics and practical hands-on skills to apply the theoretical principles into real-world field practices. It is aimed at those that have completed Broadband Fiber Optic Technician Level 1 and are ready to build upon that knowledge to gain a deeper and expanded mastery of FTTH broadband theory and skills.

Areas of focus are standards and codes, advanced topologies and methodologies, active and passive devices, ODN and FTTB installation, testing and troubleshooting, as well as expanding upon the fiber theory areas covered in Level 1.

Learners that complete this course will earn digital credentialing through Credly and will be eligible to sit for the ETA Broadband Technician (BFT) credential exam.

Credentialing



ETA® International Broadband Technician (BFT)

Valid for four years.



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.

"[The instructor]'s engagement and vast knowledge of fiber optic systems is unmatched and even taught someone with 10+ years experience multiple different things."

-Greg Abbott, Gibson Technical Services



Broadband Fiber Optic Technician Level 2



Classroom Lecture

- Introduction
- FTTx/PON Methodology
- Topologies
- ODN and OSP
- Ribbon Cable, Fiber, and Theory
- Splicing
- Passive Devices
- Active Devices
- Loss Budgets
- ODN Installation
- ADSS Installation
- FTTB Installation
- Testing
- Safety Best Practices
- Wrap-up and Review

Click or scan for detailed course information



Hands-on Skills Labs

Review of Safety Practices

Cable Preparation

• Prepare a stranded cable for butt-entry installation into a fiber closure/panel.

Prep Panel/Closure

- Secure cables to closure/panel and route blue tube to splice tray.
- Splice the blue tube fibers in the splice trays of the closures.
- Splice the blue tube fibers to pigtails in Panel 1.
- Use fuse-on connectors to terminate the blue tube fibers in Panel 2.

Fanout Kit

What is a fanout kit and how do I use it?

Splicer Menu Options

Review key splicer menu options.

Mid-entry Cable and Closure Preparation

- Prepare a stranded cable for mid-entry installation into a fiber closure/panel.
- Secure cables to closure and route blue tube to splice tray.

OTDRs

- Discuss functions, features, limitations, and accessories for effective OTDR usage.
- Use an OTDR to test and identify issues with the class-built fiber span.

Optical Loss Testing

- Create a loss budget for the classroom assembled link.
- Determine optical loss for the classroom assembled link and compare to the calculated loss budget.

Fiber Identifiers and VFLs

- Use a fiber identifier to prevent cutting a live fiber.
- Use a visual fault locator to find failures in the classroom assembled link.

Documentation

Ribbon Splicing

• Fusion splice ribbon fiber.



Advanced OSP Technician

Intermediate



This instructor-led course features classroom theory that delivers a quick refresher on fiber terminology and technology before diving into FTTx, emergency restoration, fiber characterization, and how the latest industry trends may impact field practices. This is followed by hands-on skills training where attendees build and troubleshoot a passive optical network from patch panel to patch panel through various splice closures with multiple drops.

Audience: Fiber optic technicians, team leaders, installers, outside plant maintenance staff, or staff engineers

Prerequisite: Any Light Brigade foundational course such as Fiber Optics 1-2-3 or equivalent field experience

Credentialing



ETA® International Fiber Optics Technician—Outside Plant (FOT-OSP)

Valid for four years.



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.

"I have now attended three classes taught by Light Brigade instructors and have enjoyed all of them. I have come out with more knowledge than going in. I look forward to more classes in the future."

-Michael Bass, Opelika Power Services



Advanced OSP Technician



Classroom Lecture

- Safety
- Terminology & Concept Review
- Trends in Fiber Optics
- FTTx Fundamentals
- · Emergency Restoration
- Introduction to Fiber Characterization
- Wrap-up and Review

Click or scan for detailed course information



Hands-on Skills Labs

Review of Safety Practices

Cable Preparation

• Prepare a stranded cable for butt-entry installation into a fiber closure/panel.

Prep Panel/Closure

- Secure cables to closure/panel and route blue tube to splice tray.
- Splice the blue tube fibers in the splice trays of the closures.
- Splice the blue tube fibers to pigtails in Panel 1.
- Use fuse-on connectors to terminate the blue tube fibers in Panel 2.

Fanout Kit

• What is a fanout kit and how do I use it?

Splicer Menu Options

• Review key splicer menu options.

Mid-entry Cable and Closure Preparation

- Prepare a stranded cable for mid-entry installation into a fiber closure/panel.
- Secure cables to closure and route blue tube to splice tray.

OTDRs

- Discuss functions, features, limitations, and accessories for effective OTDR usage.
- Use an OTDR to test and identify issues with the class-built fiber span.

Optical Loss Testing

- Create a loss budget for the classroom assembled link.
- Determine optical loss for the classroom assembled link and compare to the calculated loss budget.

Fiber Identifiers and VFLs

- Use a fiber identifier to prevent cutting a live fiber.
- Use a visual fault locator to find failures in the classroom assembled link.

Documentation

Ribbon Splicing

• Fusion splice ribbon fiber.



OTDR Testing and Splicing Deep Dive

Intermediate



This deep dive courses focuses on proper OTDR and splicing procedures for fiber optic technicians.

The OTDR portion covers field testing and troubleshooting fiber optic spans/links and explains the various types of equipment needed for acceptance testing, documenting performance, and finding problems in a fiber physical plant. The emphasis is on proper OTDR settings, overall testing, and evaluating results.

The splicing portion focuses on the setup, operation, maintenance, and reporting aspects of fusion splicing. Students will learn the proper usage of various types of fusion splicing equipment and best practices for preparing and splicing single fiber, ribbon fiber, and fusion splice connectors. Students will develop expertise through immersive hands-on practice exercises that go beyond typical exposure and manufacturer-hosted training.

Audience: Installers, OSP technicians, maintenance techs, field supervisors, or senior technicians

Prerequisite: Any Light Brigade foundational level course such as Fiber Optics 1-2-3, Broadband Fiber Optic Technician Level 1, Fiber Optics for Utilities Level 1, or equivalent field experience

Credentialing



ETA® International OTDR Testing Specialist (OTS)



Fiber Splicing
Specialist (FSS)



Light Brigade Digital Badge

Complete this course and receive a Credly digital badge.



Sumitomo Advanced Fusion Splicing Skills

Complete this course and receive a Credly digital badge.

OTDR Testing and Splicing Deep Dive



Light and Fiber Basics

- Digital communications
- The dBm and dB scales
- Fresnel reflection

Connector Endface Cleaning and Inspection

- Connector inspection criteria
- Fiber optic connector polishes
- · Connector cleaning kits

Basic Fiber Test Tools

- Connector inspection tools
- Optical power meters
- Optical light sources

Power, Loss Budgets, and Testing Basics

- Testing link loss
- Reference testing

OTDR Introduction

- OTDR traces
- Trace versus schematic displays
- Choosing the proper OTDR
- OTDR dead zones

Click or scan for detailed course information



OTDR Configurations & Uses

- OTDR types
- Reel acceptance testing
- Checking splices
- Fiber link characterization
- Proactive maintenance
- Fault location
- · Emergency restoration

OTDR Challenges

- · Ghosts (echoes)
- OTDR dead zones
- Gainers

Proper OTDR Setup

- Auto versus manual operation
- Schematic display/test options
- Pre-testing setup
- Validation and testing
- Backing up test results

OTDR Trace Analysis

- Event signatures
- · Link ORL and reflectance data
- Proper manual cursor settings
- · Connector pass/fail
- Event tables

Hands-on: OTDR Lab Exercises

- Analysis of multiple OTDR traces
- Test a fiber route through all steps
- Rotation through various setups:
 - Front haul antenna scenario
 - FTTx feeder/distribution scenario
 - Metro or data center scenario
- Complete simulations and report findings to group

Post-test Analysis

• Trace post-processing software

Splicing Basics Overview

- Operation and settings
- Anatomy of a splicer
- Maintenance and cleaning
- Cable types

Hands-on: Fixed V-groove Splicers

- Menu navigation
- Arc check/calibration
- Cable/fiber preparation
- Splice fibers

Hands-on: Active Cladding Splicers

- Menu navigation
- Arc check/calibration
- Cable/fiber preparation
- Splice fibers

Hands-on: Active Core Splicers

- Menu navigation
- Arc check/calibration
- Cable/fiber preparation
- Splice fibers

Hands-on: Ribbon Splicers

- Menu navigation
- Arc check/calibration
- Cable/fiber preparation
- Ribbonizing discrete fibers
- Splice fibers

Hands-on: Splice Tray Preparation

- Single fiber routing and dressing
- Ribbon fiber routing and dressing

Hands-on: Fuse-on Connectors

• Single fiber fusion splice connectors

Hands-on: Documentation

- Record retrieval
- Documentation & reporting software apps

Wrap-up and Review

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