



Data Access One

Connecting Communities



FIBER OPTIC TECHNICIAN TRAINING

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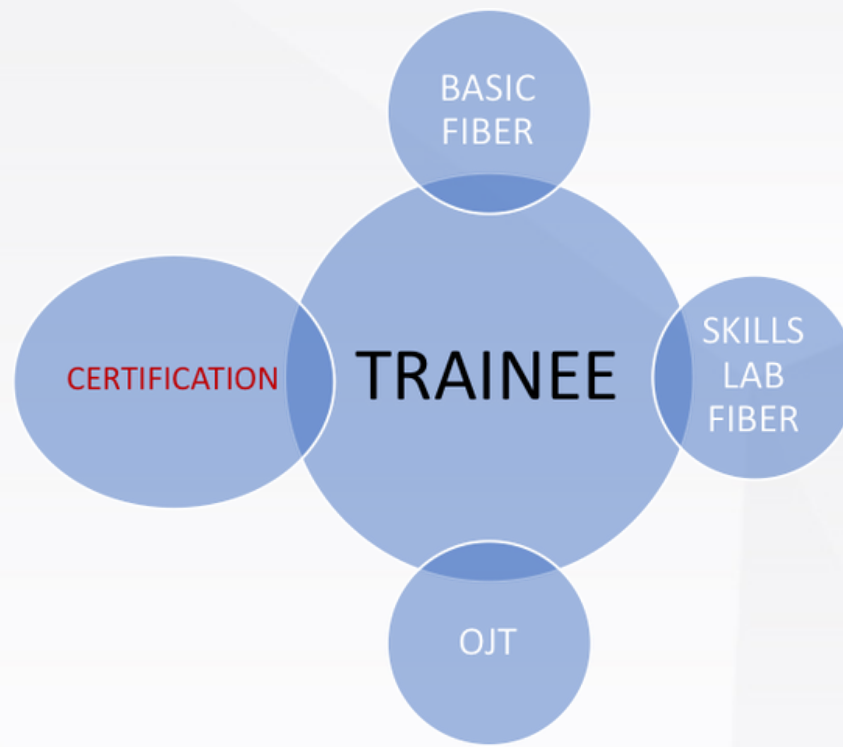
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Introduction

Fiber Optic Technician



FIBER OPTIC TRAINEE PLATFORM

Our training platform consists of four pillars involving classroom instruction and online study, hands-on skills practice, on-the-job (OJT) training, and rigorous preparation for the Fiber Optic Association (FOA) Certification Examination.

The program goal is to prepare trainees to become Certified Fiber Optic Technicians (CFOTs) within six months of full time employment. This the primary FOA Certification for all fiber optics applications. CFOTs have appropriate knowledge, skills and abilities (KSAs) in fiber optics that can be applied to almost any job (design, installation, operation) and almost any application (outside plant, premises, manufacturing, etc.)

We are very pleased to build our training platform around the very successful Fiber Optic Associate (FOA) training model.



Program Overview



Class/Online

Trainee's obtain **knowledge** through the study of fiber optics, through guides, reference texts, online study materials and videos. They apply it in skills lab and OJT.



Skills Lab

This is not the usual class course but a "hands-on" **skills** lab. It is intended to help trainee's learn new skills - the skills needed to install optical fiber cable.



OJT

OJT is the well-known term for "on-the-job training." Workers comprehensively strengthen their knowledge, skills and **abilities** through daily performance under strict supervision.

Fiber Optics Basics

An important criteria for selecting the FOA model is their constant goal to include the latest technology. Too many courses teach obsolete theory and practice, out of obsolete textbooks! FOA updates its self-published books, websites and videos continuously to keep them the most up to date available anywhere. This course will teach the differences between applications (telco/Internet/CATV/LAN, etc.) to educate the student to be able to intelligently and confidently work in today's environment.



Fiber Optics Basics

Fiber Optics Basics

This FOA in class, online Fiber U Study Program is designed to familiarize fiber optics novices with the technology and processes involved in fiber optic network design, installation and operation. It can also refresh and improve the knowledge of individuals with some training and/or experience, such as FOA CFOTs. It is strictly focused on the practical aspects of fiber optics and not intended to try to teach the theory. Only concepts needed to design, install, test and use fiber optic networks will be taught and reinforced. This includes explanations of the variety of components and technological approaches used and how to choose the best application for the network.

KSAs - Knowledge, Skills and Abilities

The FOA uses knowledge, skills and abilities (KSA's) to set the standards for what a technician needs to know and what skills and abilities they must acquire to work effectively in fiber optics. **Knowledge** is acquired from classroom instruction or online study using available reference materials like textbooks, websites, videos, and online courses. **Skills** training in a laboratory setting will allow technicians to further solidify their knowledge by practicing and using tools used on the job until they become proficient. After demonstrating skill competency, the trainee will participate in OJT under close supervision and demonstrate the **Ability** to perform required tasks on daily assignments.



Fiber Optics Basics

Course Format

The course format embodies the multiple modality approach to learning and comprehension. This in class/online study program focuses on the hands-on processes in which fiber optic techs should become skillful. It will divide the basic skills of fiber optics into topics focused on specific areas: types of fiber, communications systems, safety, tools, cables, splicing, termination and testing.

Each topic will have a brief introduction to the subject and identify what is to be learned. Reference materials will be offered in several learning formats: FOA YouTube Videos, specific pages in the FOA Online Reference Guide to Fiber Optics, Virtual Hands-On (VHO) tutorials, and relevant chapters in the FOA Reference Guide to Fiber Optics study textbook. Classroom textbook study and review are facilitated by instructors, mentors, and working professionals.

When doing each exercise, it helps to watch the videos completely several times before any attempts at hands-on exercises. Trainees will probably find it convenient to have videos ready to play and to refer to while practicing the hands-on exercises.

Course Modules

Lesson 1: Introduction, Overview, Standards, Safety

Lesson 2: Fiber Optic Jargon - The Language of Fiber Optics

Lesson 3: Fiber Optic Communications

Lesson 4: Fiber Optic Transmission Systems and Components

Lesson 5: Optical Fiber

Lesson 6: Fiber Optic Cables*

Lesson 7: Termination and Splicing*

Lesson 8: Fiber Optic Testing*

Lesson 9: Fiber Optic Network Design

Lesson 10: Fiber Optic Network Installation

*Skill modules



Fiber Optics Communications

Lesson Plan

Lesson 3

Objective: The fiber optics “jargon” learned in Chapter Two will assist in the understanding of the advantages of using optical fiber as a communication medium.

What you will Reinforce and Learn:

The Metric System

Specialized fiber optic terms

Color rendition

Importance of hand-eye coordination

Development of telephone, the Internet, CATV, LANs and premises networks

Why fiber has become the communications medium of choice for almost every kind of communications

Other applications for fiber: Security systems, military and platforms metropolitan/industrial/utility networks

Printed/ Online

FOA Reference Guide Book on
Premises Networks and FTTH

Lennies Lightwave Guide
Chapter 3

Take Chapter Quiz 3

References

YouTube Video

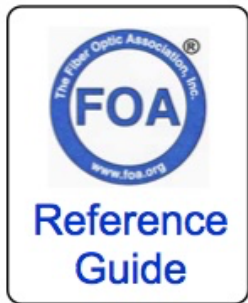


Basic Fiber Optics Reference Materials



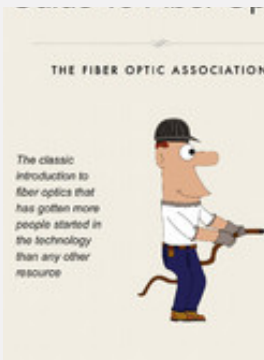
————— YouTube Study Videos

YouTube is a free network full of a wide variety of video on the many aspects of fiber optic communication systems. Several hard to understand concepts could be made easy when accompanied by a YouTube video.



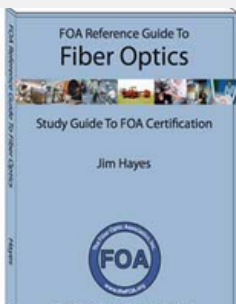
————— FOA Online Reference Guide

FOA Guide Learn more about fiber optics at the FOA Online Reference Guide to Fiber Optics - almost one thousand pages of technical information on fiber optics. It's the world's most used and trusted site for technical information on fiber optics.



————— Lennies Lightwave Guide

Lennie's Guide is the result of more than 30 years of experience in fiber optics from Lennie and his friends, including training tens of thousands of techs to help them get started in fiber optics. It's intended to be a place to start, a basic guide that will teach the jargon and basics of fiber technology and practices.



————— FOA Reference Guide (Text)

A complete guide to the design, installation, testing and operation of fiber optic networks. This book offers expansive coverage on the components and processes of fiber optics as used in all applications and installation practices.



Basic Skills Lab

This is a "hands-on" guide. It is intended to help the trainee learn the industry standards for installing optical fiber cable plants. Properly done, this course involves learning how to use the tools and components of fiber optics in a realistic manner. We have the equipment that trainees need to access to acquire a proficient skillset with fiber optic tools. We have the proper components in the lab for learning the many processes used in fiber optics.

Download and read the appropriate section of the **Fiber U Basic Skills Workbook** before working on lesson. It will guide you through the lesson and at the end, provide worksheets to be filled in to document your work on that lesson. At the end of the course, your workbooks show your completion of the course. Save them for future reference.

Lesson Plan:

Read the material links on each lesson plan before going to the next lesson. After reading the workbook section and VHO tutorial and watching the videos, complete the exercises using all the tools and components types available to you.

Lesson 1: Introduction, Safety in Working With Fiber Optics

Lesson 2: Fiber Optic Tools and Equipment

Lesson 3: Fiber Optic Cables

Lesson 4: Fiber Optic Splicing

Lesson 5: Fiber Optic Termination

Lesson 6: Fiber Optic Testing

The Fiber Optic Association Inc.
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Strippers: (L>R), Miller stripper, No-Nik Stripper and Micro-Strip

It is important when preparing the cable to determine how easily the fiber can be prepared. If possible, get a sample of the buffered fibers used by the manufacturer to determine the time it takes to strip the fiber will affect the time and cost of the installation job.

Take a piece of the tight buffered fiber from the distribution cable and try stripping it following the following guidelines.

Wear Safety Glasses for this exercise!!

Do not use your finger to feel for the fiber ends. You can stick the fiber into your finger and it will usually break off in your finger, producing a painful experience! Always wear safety glasses when working with fibers, to prevent getting fiber pieces in your eye. It is very hard to remove and very painful!



To hold the fiber for stripping, hold it between your fingers, wrap it between your fingers in a zig-zag fashion or wrap it around your palm. Do not bend the fiber in a small radius. Fiber is very strong in tension but breaks easily over sharp edges.



Lab Skills Lesson Plan

Fiber Optic Safety

Objective:

Fiber optics installation is not without risks. Outside plant construction when installing the fiber often means working around heavy machinery – trenching machines, backhoes, bucket trucks, trailers of cable reels, workers vehicles and even vehicles on roadways near the construction. Workers should be trained in OSHA safety practices and utilize appropriate personal protective equipment (PPE) while being closely monitored to ensure they follow all safety practices.

From this lesson you should learn:

The skills necessary to install fiber optics
Guidelines for setting up a lab or work area
How to enhance learning using the self-study components
How to safely work with fiber

Lab Tools and Materials

Precision Fiber Cleavers
Electrical Cutting, Crimping, & Hand Tools
Crimp Tools
Kevlar Shears & Cutters
Strippers & Slitters
Electrical Work Bench Tools
Scribes
Splicers
Fiber Cables



Safety Rule:

This splicer has safety glasses on and is working over a black mat to help see the glass fibers.

References

Fiber Optic Skills Workbook
YouTube Video
Virtual Hands-on Tutorial
FOA Reference Guide



ON THE JOB TRAINING (OJT)

FOA Fiber U OJT-To-Cert Program

The **FOA Fiber U OJT** Program combines online study at the Fiber U classroom, skills lab training and OJT to help new trainees acquire the skillset needed to become fiber optic technicians. Upon completion of this program, the trainee will proficiently demonstrate the **knowledge, skills and ability** required in fiber optics and be prepared to take the FOA CFOT (Certified Fiber Optic Technician) Exam and/or the CPCT (Certified Premises Cabling Technician) Exam.

Requirements To Be An FOA OJT Trainee

Trainees should have an education level of approximately 10th grade, with basic math and reading level competency. They should have the ability to work independently, follow directions and be punctual. They must be dedicated to the program which requires an extra level of time commitment on the job, mostly for outside online study.

Westport Broadband Internet Pilot Project

Trainees will receive hands-on field training as part of the broadband fiber optic installation project in Westport. Trainees will have the opportunity to demonstrate their ability providing premises cabling (FTTH) at Westport Academy and other outside plant projects with Paniagua Enterprises.



OJT Lesson Plan

Objective:

The OJT Trainee section is the most important, final component of the program. Fiber Optics knowledge and Skills lab experience will be reinforced in the field. The trainee is paired with a professional installer, technician or mentor and exposed to the basic practices of fiber optics and/or premises cabling. Practical application skills will continue to develop while working on outside plants.

Lessons Learn:

FOA OJT Log spreadsheet: Trainees will keep track of their work using the OJT Log.

Mentorship: A mentor will work with the trainee on the job and be an available resource.

Experienced supervision: Mentors experienced in specific types of work required will instruct, monitor and grade trainee's progress.

Job Experience: OJT training is real world experience and contributes to the mandatory one year work requirement needed to take the Certification Exam.



Intended For: Newcomers to fiber optics who want to work in the field and learn from mentors.

On-The-Job Skills and Abilities

- Safety Working with Fibers
- Proper handling of tools and equipment
 - Optic Cables
 - Optic Splicing
 - Optic Termination
 - Traffic Control

Trainee Requirements

Trainees should have an education level of approximately 10th grade, with basic math and adequate reading level. They should have the ability to work independently, follow directions and be punctual.



FOA CERTIFICATION Certified Fiber Optic Technician (CFOT)

What Is Certification?

In today's high tech world, certification is considered proof of professional status and is often required for jobs. The FOA was chartered as a professional association to promote professionalism in fiber optics through education, certification and standards. FOA certifications are **recognized by the US Department of Labor** and many other organizations worldwide.

Why CFOT® ?

This is the certification for most fiber optic technicians. It is based on the knowledge, skills and abilities (KSAs) deemed necessary for all technicians involved in the design, installation, testing and operation of fiber optic networks and is recommended for anyone involved with fiber optic communications systems.

What Is The Value Of Industry-Based Certifications (IBCs)?

Industry-based certifications (IBCs) are one model that is being embraced by educators, employers, and policymakers. Market forces, not the educational system, drove the creation of IBCs. They differ greatly from other kinds of postsecondary credentials and awards in that they are exam-based, administered and accredited by third parties, and developed by the private sector with little to no involvement from public institutions.

What Are the Benefits of FOA Certification ?

Like any certification program, the benefits to those who pass the certification tests are based on the recognition of achieving a level of competence in the fiber optics field. For the end user looking for competent fiber optic personnel, it is the knowledge that this person has demonstrated knowledge, skills and ability in the field.





Supported Programs



OSHA 10, OSHA 30

This 10-hour safety course covers general safety and health hazards for entry-level workers. The 30-hour safety course provides a greater variety of safety subjects and in-depth, industry-specific training. Course is intended for supervisors and workers with safety and health responsibility. Attend class. Pass test for certificate.



TRAFFIC CONTROL

The Federal Highway Administration, and several state Departments of Transportation have reviewed this program. The primary objective of Workzone Flagger Training (Novice) is to train flaggers to provide safe passage of traffic through and around work areas and to minimize confusion by bringing standard flagging procedures to our nation's highways. This program will have crew members trained and certified in safe flagging techniques.



HEAVY EQUIPMENT

Operators drive machinery used to construct roads, bridges, buildings, and other structures as well as read construction stakes, calculate cut and fill for grading, and understand how to control surface and ground. Attend Six hours of training. Pass test for certificate.



CONFINED SPACES

Confined spaces are defined as spaces with configurations that hinder the activities of technicians who must enter, work in, and exit them. Because of the limited ways a technician can enter and exit these spaces, confined spaces may contain hazards and are not designed for continuous use. Confined spaces include but are not limited to tanks, utility holes, underground vaults, storage bins, pipelines, pits, silos, and process vessels. Two classroom hours required for certification.

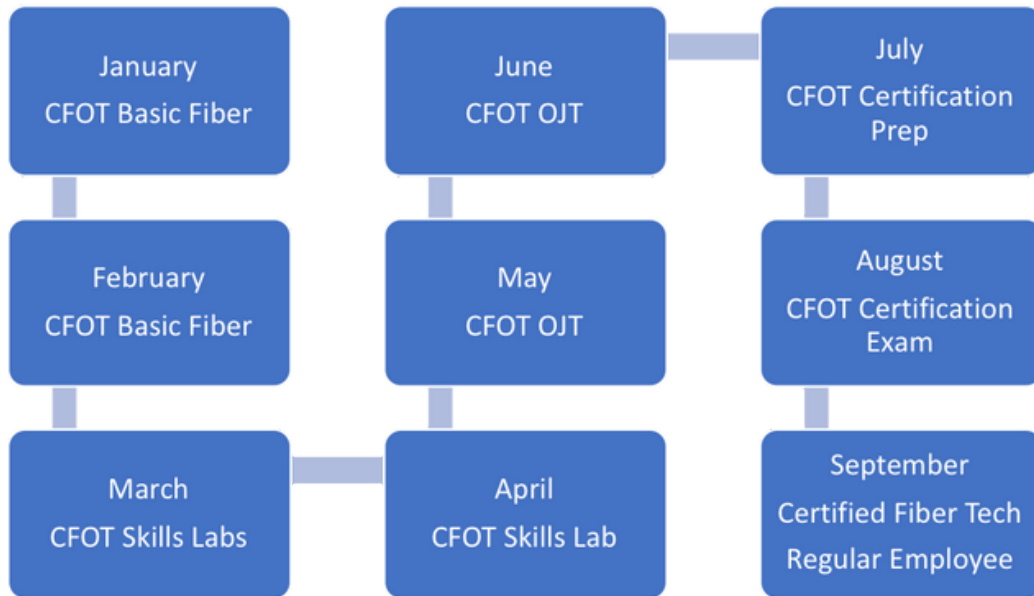


EROSION CONTROL

Class will train field personnel on techniques and standards that assist with field implementation of erosion and sediment controls. Industry personnel's knowledge about erosion and sediment control principles, implementation techniques, and specifications associated with various best management practices are an essential component of Maryland's statewide sediment control program. Attend class. Pass test for certificate.



Timeline



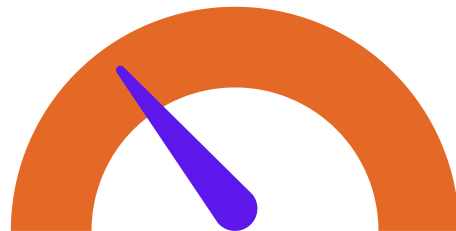
In Class/Skills Lab

The knowledge and skills components of the training program will consume about sixty percent of the total hours devoted to the program.



Project/ In Field

The ability to apply and practice the knowledge and skills learned, will consume about forty percent of the total hours devoted to the program.



Total Hours : 680



Conclusion

We are excited for the opportunity to once again join the Mayor's Office of Education and Development (MOED) and positively impact the Baltimore workforce. This summer we successfully launched the "Westport Broadband Internet Pilot Project" with youth working as Community Associates in the Summer Youthworks Program. The youth disseminated information to residents about the Westport Broadband Project, the Federal Communications Commission's (FCC) Affordable Connectivity Program; and, collected other useful information about the project area.

Presently, we are on a mission to extend our workforce development goals with a plan to offer Fiber Optics technician training and directly connect the participants to the Westport Broadband Internet Project. The partnership we established with MOED over this past summer can be broadened to include this specialized, technology training which will lead to high wage employment and long lasting careers.

The Fiber Optics Association's Certified Fiber Optics Technician Program (CFOT) is designed with multiple learning modalities (in class training, skills lab, online lessons, YouTube videos, reference manuals, workbooks and guides). Our partner, Paniagua Enterprises has thirty years of construction experience in the broadband field. They have been classroom training and providing superior on-the-job-training for employees in this field where there is a high demand for certified technicians. The Center for Educational Leadership has been conducting technology training across multiple venues and for a variety of audiences for more than twenty years.

We look forward to our continued relationship with MOED to utilize a great employment service for the workforce of Baltimore's underserved communities.

