Certified Fiber Optics Technician (CFOT) Level I

The Basic Fiber Optics Networking Course is designed for anyone interested in learning basic fiber optic networking and becoming a Certified Fiber Optics Technician. Certified Fiber Optic Technician - is the FOA certification for general fiber optics applications. CFOTs have a broad knowledge in fiber optics that can be applied to almost any job - design, installation, operation - for almost any application - outside plant, premises, manufacturing, etc. FOA CFOT certification is based on an extensive knowledge of fiber optics technology and application as well as demonstrated skills in appropriate tasks. Most CFOTs work in the industry as contractors or installers. Consultants, network designers, estimators and trainers would also be expected to have such credentials. Many CFOTs are involved with the manufacture of fiber optic components such as cables, patchcords, active devices and communications systems. The course includes all materials and the CFOT exam which is a test of the applicant's level of knowledge of fiber optics in a broad-based exam that covers technology, components, installation and testing and requires verified skills in fiber optics.

The course is a one week course offered five day's Monday thru Friday. The classes start at 8:00 AM with one hour for lunch ending at 5:00 PM. Each class consists of 10 students which allows more time for hands-on instruction.

Program Overview

Level 1: WorkKeys/NCRC Work Readiness Component

WorkKeys is a national system for documenting, assessing, and improving workplace skills. Developed by ACT, WorkKeys is designed to benefit individuals, businesses, and educators to improve the overall quality of America's workforce. WorkKeys is being used by employers nationwide to identify the skills employees need to be successful on the job and to determine where additional training will help build a higher performance workforce.

All program participants would be required to take the WorkKeys assessment in the areas of Applied Mathematics, Locating Information, and Reading For Information.

Step 1: Program Benchmarking

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Applied Math</th>
<th>Locating Information</th>
<th>Reading for Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Product Cutting Machine Setters/ Set-up Operators</td>
<td>3</td>
<td>4</td>
<td>3</td>
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</tbody>
</table>
**Step 2: Core Assessment**

Assessments:

- Applied Mathematics
- Locating Information
- Reading for Information

**Step 3: NCRC Certificate**

The National Career Readiness Certificate, issued by ACT, is a portable, evidence-based credential that measures essential workplace skills and is a reliable predictor of workplace success. This credential is used across all sectors of the economy and measures the following skills:

- Problem solving
- Critical thinking
- Reading and using written, work-related text
- Applying information from workplace documents to solve problems
- Applying mathematical reasoning to work-related problems
- Setting up and performing work-related mathematical calculations
- Locating, synthesizing, and applying information that is presented graphically
- Comparing, summarizing, and analyzing information presented in multiple related graphics

**The NCRC is issued for four levels of skill attainment**

**Bronze:** (Level 3 - Applied Math, Locating Information, Reading For Information)

**Silver:** (Level 4 - Applied Math, Locating Information, Reading For Information)

**Gold:** (Level 5 - Applied Math, Locating Information, Reading For Information)

**Platinum:** (Level 6 - Applied Math, Locating Information, Reading For Information)
**How it works:**

The Certificate is based on ACT's world-renowned WorkKeys' assessments—which remain the only proven system for linking job skills with workplace success. To earn The Certificate you must take three WorkKeys assessments—Applied Mathematics, Locating Information, and Reading for Information. Your WorkKeys scores will determine what level of The Certificate you are eligible to earn.

**Benefits:**

The Certificate is an easily understood, conveniently attained, and universally valued workforce credential. Because The Certificate validates that an individual has certain essential skills important across a range of jobs, employers, career seekers, economic developers, and educators can use The Certificate as a common language to improve the quality of the workforce. The skill levels are meaningful to career seekers, educators, and employers.

**Nationwide portability:**

WorkKeys is a program recognized by employers and education entities nationwide. WorkKeys assessment results and certificates can help individuals find job opportunities wherever they live.

**Step 4: Skill Enhancement**

Participants who did not meet entry level standards for program admission would be referred to an adult education program to enhance their skills.
Fiber Optic Technical Training

Day 1  Each day 8:00 A.M. to 5:00 P.M.

Start:
Hand out Student Applications and Examinations
Fiber safety training and good work practices
Theory of How Fiber Optics Works
Very short demonstration of the principle with Visual Fault Locator
Core Cladding construction of Glass Fiber, Indexes and Two Multimode fibers
Types of Fiber Optic Cables Identification skills and application knowledge

a. Loose tube
b. Dry Blocked Loose tube, Hybrid Cable
c. Tight Buffered
d. ADSS
e. Zip Cord
f. Armored Cable
g. Simplex
h. Breakout style
i. Distribution style tight buffered cable
j. Composite Cable Construction

Short Break

Work on questions on Examination individually
The Dimensions of Fiber Optic Cables, i.e. what math do we need to know
Catalog Spec Sheets How to read and use for install
Minimum Bend Radius after Fiber is installed
How to Pull fiber optic cables

Short Break

Fiber Color Code
OSP Color Code for Locates, ASPW Website
NEC and Jacket marking for listed cable construction

Lunch

Tools of the trade and how to use them
Prepare three styles of cable for proper pulling through conduit
Prepare loose tube cable for installation of fan out kit after installed in wall mount box

**Break**

Prepare Tight buffered Distribution cable for termination after installed in wall mount box
Install polish and cleave ST connector on one end of cable

**Break**

Install crimp style connector, cleave and polish on Breakout cable
Inspect connectors with microscope
Do JDSU flow chart on proper connector cleaning sequence
End of Day One

**Day 2** 8:00 a.m.

Install Fast connector, either AFL or UniCam Corning or Panduit or all three
Work on more questions on Examination

**Break**

Set up Power Meter and Light source for connector testing
Learn which wavelengths are used for singlemode and multimode
Calculate loss budget for multimode cable, do board problem
Work on more examination questions

**Break**

Measure everyone's connector lost
Work on more examination questions

**Lunch**

Install Video camera and monitor on fiber in wall mount box
Work on more examination questions

**Break**

Fusion splice pigtails on multimode fiber and place in patch panel
Break

Work on more examination questions
Do insertion loss testing of fusion spliced pigtails record results
Use smart phone with camera to test for live fiber strands
Start to prepare splice closure by installing cables

**Day 3** 8:00 A.M.

Short demonstration of how to install fiber strands in splice tray
Class installs fiber in splice tray and fusion splices with splice sleeves

Break

Complete splicing and close up splice closure
Work on more examination questions

Break

Fusion splice single mode pig tails on spliced cable to be able to OTDR test link
Do power meter and light source insertion loss test on link after VFL continuity test and cleaning connector

**Lunch**

Finish questions on examination
Review how OTDR works
Review parts and settings for OTDR operation
Set up OTDR for testing of just built single mode cable plant

Break

Collect Examinations and student applications
Explain results of trace and event table
Install grounding and bonding jumpers on armored cable

Break

Review training and answer any questions or clarify areas of doubt
Day 4  8:00 A.M.

Review field installation of overhead ADSS fiber optic cable
Go to pole portion of outside plant and install deadends, trunions and ADSS fiber
Install Wall Mount patch panel in Storage shed
Install snow shoe on pole for ADSS slack storage

Lunch

Install underground portion of ADSS fiber Optic Cable
Install connectors on both ends

Day 5  8:00 A.M.

Test installed fiber optic cable and compare to loss budget for distance
OTDR Single Mode portion of fiber optic cable

Lunch

Repair mysterious break in fiber optic cable by backhoe using splice closure and fusion splicer

Break

Retest fiber optic cable

Day 6  8:00 A.M.

Fusion splice pigtails on single mode fiber

Break

Connect Camera and monitor to both ends of multimode or single mode fiber
Do visual inspection of connector ends faces

Lunch

Team presentation of test results from OTDR and power meter and light source testing
Break

Team presentation of proper end face cleaning
Review course and complete course evaluation
Collect CFOT examinations and student applications