# Program Information

## Lesson:

### *Basics in Fiber Optics*

## Training:

## Fiber Optics

## Time frame:

### 60 minutes

# Instruction Section

## Learning Objectives:

# Explain the basic principles of fiber optics.

# Identify applications of fiber optics in modern communications and other industries.

# Differentiate between the uses of outside plant and premises fiber optics.

# Identify industry standards in fiber optics.

# Recognize and demonstrate knowledge of safety measures when working with fiber optics.

## Assessment Tools/Methods:

# Participants should be assessed based on participation in group discussions and activities.

## Learner Prior Knowledge:

## Prior to class, participants will need to read:

## Reference Guide: Basic Overview (<https://www.thefoa.org/tech/ref/basic/basics.html>)

## Reference Guide: Fiber Optic Standards (<https://www.thefoa.org/tech/ref/basic/standards.html>)

## Reference Guide: Fiber Optic Safety (<https://www.thefoa.org/tech/ref/safety/safe.html>)

## Prior to class, the participants will need to watch:

## [FOA Lecture 1: Fiber Optics & Communications](http://www.youtube.com/watch?v=pIlBlNW7sOo&list=PLC7CC6B17EF009849&index=28&feature=plpp_video)

## [FOA Lecture 2: Safety When Working With Fiber Optics](http://www.youtube.com/watch?v=qhqclWudh7s&list=PLC7CC6B17EF009849&index=27&feature=plpp_video)

## Instructional Activities:

# Start with a brief introduction to the topic of fiber optics and its applications in modern communications.

# Emphasize that participant engagement and discussion will be key throughout the lesson.

# Activity 1: Discussion on the Basics of Fiber Optics:

# Invite participants to share their understanding of fiber optics.

# Encourage them to define what fiber optics means to them and how they perceive its role in modern communications.

# Facilitate a discussion where participants can exchange ideas and insights about the development and evolution of fiber optics in the telecommunications industry.

# Transition into discussing the applications and advantages of fiber optics.

# Encourage participants to share examples of how fiber optics is used in different industries or everyday life.

# Invite participants to discuss their thoughts on training and certification in fiber optics and how it contributes to safe and efficient installations.

# Encourage an open discussion where participants can engage with each other and exchange ideas, experiences, and practical tips related to fiber optics.

# Activity 2: Discussion on Standards:

# Present the ISO/IEC Guide 2:1996 definition of a standard:

# "A document established by consensus and approved by a recognized body that provides for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.".

# Engage the learners in a discussion about why standards are important using the following guided questions:

# Can you think of examples of standards in your daily life, besides technology?

# How do standards benefit consumers and businesses?

# What challenges might arise if there were no standards in the communications industry?

# Ask participants to discuss how standards ensure compatibility and reliability in communication networks based on information from their self-guided learning.

# Have them use their knowledge to discuss how standards would hypothetically influence their decision-making if they were purchasing fiber optic network equipment for a business. Have them consider the following:

# Compatibility and Interoperability

# Reliability and Performance

# Future-Proofing

# Risk Management

# Vendor Support and Compliance

# Cost Considerations

# Activity 3: Fiber Optic Safety:

# Have participants recall important safety measures when working with fiber optics; list the responses on a whiteboard or display.

# Make sure participants include topics such as PPE, handling chemicals, clean work areas, ventilation, and avoiding eye exposure to laser light.

# Divide participants into small groups and assign each group a specific section of the safety poster (e.g., eye safety, chemicals, splicing hazards, clean work area).

# Ask them to brainstorm key safety tips and visual elements for their assigned section.

# Provide art supplies and poster-making materials to each group and instruct them to design their section of the safety poster based on their brainstorming.

# Encourage creativity and use of visuals, symbols, and colors to make the poster engaging and informative.

# When completed, ask each group to present their section to the rest of the participants emphasizing the importance of each safety aspect and how it contributes to a safe working environment with optical fiber.

# Conclude the activity with a brief discussion on key takeaways about safety protocols.

# Summarize key takeaways from the lesson and encourage participants to ask questions and seek clarification on any topics discussed.

## Resources:

# Whiteboard, markers or display to record discussion points

# Art supplies: markers, plain paper or poster paper, pens, pencils, etc.

# Reflection Section

Ask participants to reflect on what they have learned and how they can apply that knowledge in their professional or personal contexts.

*This lesson is supplemental to the Fiber Optics lesson within FOA's Fiber U curriculum and not part of the FOA required curriculum to obtain the Certified Premises Cabling Technician certification. If interested in becoming an approved school and/or obtaining a certification, please contact FOA at* [*thefoa.org/contact-foa.html*](https://www.thefoa.org/contact-foa.html)*.*

*Note: AI, specifically ChatGPT 3.5, was used to generate scenarios for this contextualized lesson plan.*