



# Fiber Testing and Maintenance

## OVERVIEW

Testing and Maintenance for Fiber Technicians provides an understanding of post-activation fiber-optic theory and application. The course concentrates on the test equipment and procedures necessary to perform testing and maintenance for new fiber-optic links, troubleshooting service outages and restoring fiber-optic links to their original performance specifications. It also describes the process of fiber-optic restoration planning and implementation of preventive maintenance regimens in an HFC network.

### **Delivery Options:**

 Learning takes place using a textbook. Lesson and final exams are taken online.

 This course contains a DVD.

### **Completion Time:**

Varies based on the student's self-study pace, however, the maximum time allowed is six months from enrollment.

## BENEFITS

Upon completion students will:

- » understand the importance of recording and maintaining fiber-optic link performance documentation
- » have the knowledge to operate and use fiber-optic test equipment
- » be able to correctly set up and use the OTDR for initial testing, turn-up and restoration purposes
- » have the ability to read and understand fiber-optic event signatures
- » be familiar with basic restoration procedures
- » earn two hours of college credit
- » use this course to help prepare for SCTE's Broadband Transportation Specialist and Broadband Communications Technician Engineer Category III certifications
- » earn an industry-recognized Jones/NCTI™ certificate of graduation

### **Ideal for:**

Technical personnel involved in installing and maintaining the fiber-optic portion of HFC networks, including:

- » fiber-optic technicians
- » service technicians
- » network technicians

## COURSE OBJECTIVES

Upon completing this course students will be able to:

1. explain the reasons for and benefits of a maintenance plan
2. understand the importance of detailed fiber-optic configuration and performance documentation
3. describe various fiber-optic test equipment and their applications
4. list the test parameters that must be entered into the OTDR setup table prior to making any test

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## RELATED COURSES

**Students completing this course should then enroll in:**

- » Advanced Technician
- » Service Technician
- » System Technician
- » Return Path Operations
- » Effective Supervision

## TRAINING FEATURES

- » Knowledge-based, broadband and job-specific content
- » Highly illustrated and easy to read course materials
- » Curriculum advising
- » 24/7 lesson feedback and progress monitoring at [www.jonesncti.com](http://www.jonesncti.com)
- » Online testing

Visit [www.jonesncti.com/coursepolicy.htm](http://www.jonesncti.com/coursepolicy.htm) for important information on computer hardware/software requirements and student-to-student transfer and extension limitations



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## **COURSE OBJECTIVES** *(Continued)*

5. explain the process of fault location using the OTDR
6. discuss the causes of reflective and nonreflective events viewed on the OTDR
7. compare and analyze test results against system documentation
8. explain how to troubleshoot a service outage in both the inside and outside plant environment
9. outline both emergency and permanent optical system restoration procedures
10. describe the importance and application of status monitoring in a fiber network
11. establish and implement preventive maintenance regimens

## **COURSE OUTLINE**

### **1. Maintaining Optical Networks**

Knowing your system, preparing for what can go wrong, understanding the troubleshooting process and documenting adds, moves and changes

### **2. Introducing Optical Test Equipment**

Examining optical power meters, light sources, optical fiber identifiers, optical fiber talk sets and optical loss test sets

### **3. Presenting OTDR Basics**

Introducing OTDRs, describing OTDR types, examining OTDR features and discussing OTDR specifications

### **4. Performing OTDR Measurements**

Performing preliminary procedures, recognizing OTDR signatures, programming the OTDR, understanding OTDR tests, conducting OTDR tests and making span measurements

### **5. Conducting Acceptance Testing of a Broadband Optical Link**

Testing optical power and reflectivity, performing optical transmitter and receiver tests, examining scalable optical nodes and using documentation

### **6. Troubleshooting the Fiber Outage**

Understanding key elements of effective troubleshooting and outlining the troubleshooting process

### **7. Planning Fiber-Optics Restorations**

Explaining key elements of an effective restoration plan, understanding and identifying causes of failures and planning efficiently and effectively

### **8. Restoring Service in Optical Networks**

Assembling necessary resources, outlining restoration safety concerns, adjusting to the restoration scenario and preparing for the next restoration

### **9. Preventing Optical Failures**

Inspecting the plant visually, using status monitoring tools, testing optical transport and identifying RF effects on optical performance



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For more information call 866.575.7206 or email [sales@jonesncti.com](mailto:sales@jonesncti.com)  
9697 East Mineral Ave. • Centennial, CO 80112 • [www.jonesncti.com](http://www.jonesncti.com)