



Instrumentation & Controls

## Fiber Optic Testing, OTDR & Inspection

## Course Introduction

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While fiber optic found at any transmission system worldwide, the testing of the fiber optic is one of the most important activities to ensure that the fiber optic link will have a good performance as well as detect any problem in case of fault

## Target Audience

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- Telecommunication
- Transmission engineers
- Operators
- Fiber optic installer
- Optical communications system installer
- Site engineers
- Supervisors

## Learning Objectives

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- Understanding the physics of the optical transmission
- Learn deeply many techniques to test the fiber optic cables
- Understand the testing standards and criteria
- Preparing the test plan
- Understanding the test procedures
- Prepare the test documentations

# Course Outline

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- **01 Day One**

- 1. Introduction & Fundamentals**

- Optical Transmission fundamentals
    - Why we need fiber optic testing?
    - Who can test fiber optic?

- 2. Fiber optic and connectors types**

- SM Fiber optics - G652D, G655, G657
    - MM fiber optics - OM1, OM2, OM3, OM4
    - Fiber optic connectors' types
    - Fiber optic connectors' categories

- 3. Test equipments and test parameters**

- Inspection Microscope
    - Fiber tracer
    - VFL
    - Optical power meter
    - OLTS
    - OTDR
    - Variable Attenuator
    - Dispersion Analyzer
    - Spectrum Analyzer

- **02 Day Two**

#### **4. Testing tools and accessories**

- Launch cable
- Adapters and hybrid adapters
- Test jumpers

#### **5. Test criteria and loss equation**

- EIA/TIA 568 standard
- Loss budget equation

#### **6. End to end insertion loss using PM and LS (Hands-On Training)**

- Calibration
- Method A
- Method B
- Method C

#### **• 03 Day Three**

#### **7. OTDR Professional Testing (Hands-On Training)**

- What is the OTDR and how it works?
- Auto test
- Real time / live test
- Expert test
- Range, Pulse width and averaging
- Traces events understanding and analysis
- Events table
- Markers
- Ghosts

- OTDR resolution
- OTDR gain

## **8. Bare fiber testing ( un-terminated fiber ) (Hands-On Training)**

- Align by fusion splicer
- Bare fiber adapter

## **9. Optical Network Monitoring System**

- Remote testing technology
- Self testing
- Fault Notifications

### **• 04 Day Four**

## **10. Guideline of Testing & Troubleshooting**

- What can go wrong?
- Test & Fault Allocation Steps
- High Non-Reflective Loss its Bend or Bad Splice?

## **11. Project testing documentation and procedures**

- Cable Reels Visual Inspection Sheet
- Cable Reel Attenuation Test Sheet
- After Installation Attenuation Test Sheet
- Bidirectional Splice Loss Test Sheet

- End to End Loss Test (Hand over sheet)
- **05 Day Five**

- **12. Advanced test Applications**

- CD and PMD testing for very high bit rate DWDM system up to 100 Gbps
- FTTH network testing
- Intelligent Optical Link Mapping
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**13. Review and Quiz**

## Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 11, 2025	May 15, 2025	5 days	4250.00 \$	KSA - Riyadh
Sept. 15, 2025	Sept. 19, 2025	5 days	4250.00 \$	UAE - Abu Dhabi
Nov. 3, 2025	Nov. 7, 2025	5 days	5950.00 \$	USA - Los Angeles
Feb. 24, 2025	Feb. 28, 2025	5 days	4250.00 \$	UAE - Dubai