BOOST
THE LEADING TRAINING PROVIDER

Electrical Engineering

Advanced Fiber Optic Networks Installation & Design in Power System Applications

Course Introduction

Fiber Optic Network

Fiber Optic Network Design refers to the specialized processes leading to a successful Installation and Operation of a Fiber Optic Network. It includes determining first, the type of Communication Systems which will be carried over the network, the Geographic Layout (premises, campus, outside plant (OSP, etc.), the transmission equipment required and the fiber network over which it will operate. Designing a fiber optic network usually also requires interfacing to other networks which and may be connected over copper cabling and wireless.

Target Audience

- Power Systems Engineer
- Project Engineer
- Test Engineer

Learning Objectives

- Knowledge of Network Topologies
- Understanding the International Standards TIA & ISO
- Understanding the Fiber Optic Specifications
- Choose the proper and Cost Effective Components
- Preparing Fiber Optic Plant Documentations in Power Project
- Preparing Plant Link Loss Budget Analysis and Calculation

- Studying True Examples of Power Applications
- Determine Effective Bandwidth & Bite Rate of Multimode Fiber
- Preparing the Fiber Cable end and Terminating the Fiber Optic Cables
- Also Splice the Fiber Optic Cables

Course Outline

- **DAY 01**

Module (01) Optical Physics

- 1.1 Reflection
- 1.2 Refraction
- 1.3 Interference
- 1.4 Attenuation
- 1.5 Dispersion
- 1.6 Refractive Index
- 1.7 Numerical Aperture
- 1.8 Cone of Acceptance
- 1.9 Special Width

Module (02) Link Characteristics

- 2.1 Premises
- 2.2 Metro
- 2.3 Long Haul

Module (03) SM Fiber Optic Standards

- 3.1 TIA
- 3.2 ISO

- **Day 02**

Module (04) Loss Types and Loss Budget Calculation

- 4.1 Fiber Insertion Loss
- 4.2 Fiber Reflection Loss
- 4.3 Splice Loss
- 4.4 Termination Loss

Module (05) Power Budget Calculation

- 5.1 Transmitter Power
- 5.2 Receiver Sensitivity
- 5.3 Power Budget

Module (06) MM Fiber Bite Rate Calculation

- 6.1 OM1 6.2 OM2
- 6.3 OM3 6.4 OM4

- **Day 03**

Module (07) Fiber Optic Cable Types & Applications

- 7.1 Indoor Cables
- 7.2 Underground Cables
- 7.3 Aerial Cables
- 7.4 Sub-Marine Cables

Module (08) Fiber Optic Cable Types & Specifications

- 8.1 Environmental Specifications
- 8.2 Mechanical Specifications
- 8.3 Optical Specifications

Module (09) Optical Transceiver used in Power System

- 9.1 Media Converter
- 9.2 SFP
- 9.3 Built-in Optical Port

Module (10) Optics

- 10.1 Lasers & LED

- 10.2 Optical Detectors
- 10.3 Optical Amplifier
- 10.4 Optical Switches

- **Day 04**

Module (11) Fiber Optic Project

- 11.1 Site Survey
- 11.2 Network Design
- 11.3 Installation
- 11.4 As Built

Module (12) Fiber Optic Design

- 12.1 Basic Layout for the Network
- 12.2 Documentations
- 12.3 Planning the Networks
- 12.4 Choose the Components
- 12.5 Preparing the Bill of Quantities (BOQ)
- 12.6 Design Review
- 12.7 Cost Calculation
- 12.8 Define Testing Requirements
- 12.9 Writing Specifications for the Cable Plant
- 12.10 The Right of Way
- Module (13) Fiber Optic Installation
- 13.1 Cable Pulling
- 13.2 Direct Buried
- 13.3 Cable Air Blowing

Module (14) Fiber Optic Splicing & Termination

- 14.1 Fiber Optic Mechanical Termination
- 14.2 Fiber Fusion Splicing

- **Day 05**

Module (15) Fiber Optic Testing

- 15.1 Loss Testing
- 15.2 VFL
- 15.3 OTDR
- 15.4 Identifier
- 15.5 Inspection Microscope
- 15.6 Guideline of Testing & Troubleshooting

Module (16) Fiber Optic in Advanced Power Applications

- 16.1 Power Control
- 16.2 SCADA System
- 16.3 Overhead Lines
- 16.4 Underground Power System
- 16.5 Submarine Power System

- 16.6 Protective Relaying Systems
- 16.7 ARC Protection Relay
- 16.8 Transformer Heat Monitoring
- 16.9 Power Cables Real Time Thermal Monitoring
- 16.10 Distributed Temperature Sensing
- Module (17) Fiber Optic in Other Applications
- 17.1 Oil & Gas
- 17.2 Telecommunication
- 17.3 IT
- 17.4 Industry
- 17.5 FTTX

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 26, 2025	May 30, 2025	5 days	4250.00 $	UAE - Abu Dhabi
Sept. 15, 2025	Sept. 19, 2025	5 days	4250.00 $	UAE - Dubai
Dec. 29, 2025	Jan. 2, 2026	5 days	4250.00 $	UAE - Dubai