



Instrumentation & Controls

FTTX, GPON Design, Installation & Testing

Course Introduction

Since the customers have demanded for a more intensive bandwidth, the telecommunications carriers must seek to offer a matured network convergence and enable the revolution of consumer media device interaction. Here, the emergence of FTTX technology is significant for people all over the world.

This program has a deep studying using actual field samples and hands-on training for the FTTX and GPON which are the latest developments in access networks.

The course is designed for engineers, supervisors and technicians to match the rapid growth of the new technologies.

The course covers the FTTX type, OSP GPON, and customer premise cabling, equipment, installation, components and testing

Target Audience

- OSP
- ISP engineers
- supervisors
- team leaders
- telecom Technicians
- IT Implementation staff
- designers

Learning Objectives

- Knowledge what is the FTTX?
- Recognize the Type of FTTX networks
- Studying the FTTX protocols
- Installing OSP GPON and premise cabling
- Splicing and termination of fiber cables
- Acquire knowledge of GPON and components
- Calculating of the loss budget
- Calculating of the power budget
- Testing GPON networks
- Learn GPON troubleshooting
- Design FTTX Networks

Course Outline

• 01 Day One

1- Fiber optic and FTTX overview

- Fiber optic basics
- Fiber optic types
- Fiber optic standards
- What is the FTTX?
- FTTH, FTTC, FTTO and FTTB
- Triple play system
- Advantages of the FTTX

2- FTTX Networks Types and Protocol

- Point to Point (PTP)
- Active Star

- PON (Passive Optical Networks)

3- PON Networks Types

- APON
- BPON
- EPON
- GPON
- WDM PON

• 02 Day Two

4- GPON Networks Architectures

- OSP
- Data Center Side OLT
- End User Side ONU

5- GPON OSP Cabling and Components

- TIA G652.D
- Feeder cables
- Distribution cables
- Splitters
- Pre-terminated Splitter and Rack mount Splitter
- OSP splitter hub
- Distribution/ drop closure
- APC connector

6- OLT Optical Network terminals Components

- OLT
- ODF
- FDH

- STB and IAD
- Routers

• 03 Day Three

7- ONU Customer Premise Cabling and Components

- Rack mount FDH
- Wall mount FDH
- Patch Panel
- TIA G657
- ONU
- Drop cables
- Drop/customer box
- Fast connector
- UTP Cat5e, CAT6 and Coaxial cabling

8- GPON Installation

- Installation Standards and procedures
- Cable pulling
- Fiber optic fusion splicing
- Underground closure installation and fiber distribution
- FDH installation

9- ONU Installation

- Trunk and cable tray fixing
- Indoor conduits
- User termination box installation
- Fast connector termination
- UTP cables installation, termination and testing

• 04 Day Four

10- GPON testing and troubleshooting

- VFL
- End to End Loss Test with Power meter and laser source
- OTDR Test
- GPON Testing plan and procedures
- GPON Troubleshooting

11- Micro Cabling

- Micro ducts
- Micro cables
- Duct calibration
- Micro-ducts jointing
- Cable air blowing

• 05 Day Five

12- GPON Design

- Choosing components
- Actual splitter loss calculation
- End to end loss budget calculation
- Transmitter absolute power calculation
- Receiver sensitivity
- Power budget calculation
- Estimation of Bandwidth
- ITU 984
- GPON Design Guidelines
- GPON frame format

13-Review & 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