Optical Transport Network Fundamentals and Applications Training Course

4 – 8 April 2027
Johannesburg

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Ref: 1702_227980 **Date:** 4 – 8 April 2027 **Location:** Johannesburg **Fees:** 4500 Euro

Overview

Optical Transport Network Fundamentals and Applications Training Course is a one-week professional course for transport engineers, optical planners, transmission specialists, network operations teams, and telecom architects, who leave with an OTN Engineering Pack. The course connects OTN architecture, digital hierarchy, client mapping, framing, forward error correction, switching, protection, performance monitoring, synchronization, planning, and fault isolation in one operational workflow. Agile Leaders Training Center presents the course on optical transport network engineering.

Who Should Attend

- Teams responsible for optical transport architecture and capacity
- Functions responsible for transmission planning and service mapping
- Specialists responsible for OTN operations and performance assurance
- Teams responsible for transport fault isolation and restoration
- Leaders responsible for carrier and data-center interconnect design

The course assumes participants work with telecom transport, fiber networks, transmission systems, or network operations and leaves out fiber installation, optical component manufacturing, and vendor certification preparation.

Departments and Industries

The course supports optical transport decisions across communications services and connected infrastructure.

- Carrier transport engineering departments
- Telecom network planning functions
- Data-center interconnect teams
- Cloud and content network operations
- Utility communications departments
- Transport and energy infrastructure networks

Learning Objectives

By the end of this course, participants will be able to:

- Analyze OTN architecture and digital hierarchy
- Apply client mapping and multiplexing methods
- Evaluate overhead and forward error correction evidence
- Build switching, protection, and restoration designs
- Diagnose alarms and performance monitoring records
- Prioritize capacity and synchronization decisions

Course Agenda

Day 1: OTN Architecture and Digital Hierarchy

- ITU-T G.872 OTN Architecture Map
- OPU, ODU, and OTU Layer Model
- Digital Wrapper Function Matrix
- Point-to-Point and Networking Interface Comparison
- OTN Terminology and Signal Reference Sheet

Day 2: Framing, Mapping, and Multiplexing

- ITU-T G.709 Frame Structure Diagram
- Client Signal Mapping Decision Table
- ODU Multiplexing and Tributary Slot Plan
- OTUk, OTUCn, and FlexO Interface Map
- Forward Error Correction Evidence Checklist

Day 3: Switching, Protection, and Synchronization

- ODU Switching Fabric Model
- Transport Protection and Restoration Matrix
- Service Trail and Cross-Connection Record
- Timing and Synchronization Dependency Map
- Resiliency Scenario Decision Log

Day 4: Operations, Performance, and Planning

- OTN Overhead and Alarm Reference Matrix
- Performance Monitoring Indicator Dashboard
- Fault Localization and Escalation Workflow
- Traffic Forecast and Capacity Planning Model
- Carrier and Data-Center Interconnect Design Canvas

Day 5: OTN Engineering Practice

- Architecture and Digital Hierarchy Exercise
- Client Mapping and Multiplexing Exercise
- Protection and Synchronization Exercise
- Alarm and Performance Diagnosis Exercise
- OTN Engineering Pack Capstone Exercise

Practical Exercises

The course uses suggested activities to practice optical transport network engineering decisions.

- Suggested activity: map OPU, ODU, OTU, overhead, interfaces, and service-maintenance boundaries.
- Suggested activity: select client mappings, tributary slots, multiplexing paths, and error-correction evidence.
- Suggested activity: compare switching, protection, restoration, synchronization, and capacity options.
- Suggested activity: diagnose an alarm trail and assemble an OTN Engineering Pack for a carrier interconnect.

FAQs

Who suits Optical Transport Network fundamentals training and what does it assume?

Optical Transport Network fundamentals training suits transport engineers, planners, operations specialists, and architects. It assumes experience with telecom or fiber transport and does not teach cable installation, component manufacturing, or vendor exam preparation.

How does Optical Transport Network training differ from general fiber-optic training?

Optical Transport Network training focuses on digital hierarchy, client mapping, framing, overhead, multiplexing, switching, protection, and performance assurance. General fiber-optic training focuses more broadly on transmission media, components, installation, measurement, and physical-layer behavior.

What do OPU, ODU, and OTU mean in an Optical Transport Network?

OPU adapts the client payload, ODU provides path-layer functions and switching structure, and OTU adds section monitoring and transmission functions. Together they organize client transport, maintenance, multiplexing, and network operations.

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Why is forward error correction used in OTN engineering?

Forward error correction adds controlled redundancy that helps receivers detect and correct transmission errors. Engineers use its performance evidence alongside alarms and monitoring data when assessing transport quality and operating margin.

How does OTN support carrier and data-center interconnect applications?

OTN supports structured client mapping, high-capacity multiplexing, monitored service trails, switching, protection, and performance evidence. These functions help engineers build traceable transport paths between carrier nodes, cloud sites, and data centers.

Conclusion

Participants take an OTN Engineering Pack back to work. It connects architecture, hierarchy, mapping, frames, multiplexing, switching, protection, synchronization, monitoring, fault evidence, and capacity decisions. It changes isolated transport configurations into traceable service trails, operational checks, diagnosis records, and a structured network plan.