

## Telecommunication System Engineering Training

*Barcelona (Spain)*

*13 - 17 January 2025*

UK Traininig

# PARTNER



# Telecommunication System Engineering Training

Code: GC28 From: 13 - 17 January 2025 City: Barcelona (Spain) Fees: 5100 Pound

## Introduction

This course provides a comprehensive overview of fundamental concepts and key technologies prevalent in the telecommunications industry. It covers important topics such as cellular communication, asynchronous transfer mode ATM, broadband technologies, and network management. The course will also delve into future telecommunications applications and the evolving direction of the industry. Participants will gain in-depth knowledge about various telecommunication systems and how to integrate them effectively, enhancing their capabilities as engineers and specialists in telecommunications system engineering.

## Course Objectives

- Understand the basics of telecommunication systems and their functions.
- Learn about fundamental communication technologies, such as digital switching and network control.
- Explore the design of long-distance transmission links and digital transmission systems.
- Understand systems engineering principles as applied to telecommunication systems.
- Discover network management strategies that enhance business telecommunication systems and their integration.

## Course Outlines

### Day 1: Introduction to Transmission for Telephony

- Purpose and scope of telecommunication transmission.
- Overview of the three main impairments affecting voice channel transmission.
- Two-wire and four-wire transmission systems.
- Multiplexing and its impact on signal quality.
- Shaping of voice channels and noise measurement units.

### Day 2: Digital Transmission Systems

- Digital versus analog transmission methods.
- Fundamentals of Pulse-Code Modulation PCM and its development.
- PCM line coding techniques and regenerative repeaters.
- Signal-to-noise ratio in PCM-repeated lines and enhancements.
- Analyzing SONET and SDH systems and comparing the pros and cons of digital transmission.
- Advantages and issues with PCM switching versus analog systems.
- Digital network concepts and architecture.

### Day 3: Introduction to Data Communications



- Binary conventions and removing ambiguities in data transmission.
- Types of errors in data transmission and their impact.
- The physical layer of data interfaces.
- Digital transmission over analog channels.

#### Day 4: Data Networks

- Applications and initial design considerations for data networks.
- Overview of data terminals, workstations, PCs, and servers in networking.
- Various network topologies and configurations.
- Packet-switching concepts and interior gateway routing protocols.
- Introduction to TCP/IP and related network protocols.
- Analyzing the IP routing function and the Transmission Control Protocol TCP.
- Brief overview of IPv6 and virtual private networks VPNs.
- Specialized VPN protocols and Voice-Over IP VoIP.

#### Day 5: Network Management

- Fault, configuration, performance, security, and accounting management.
- Survivability and its role in network management.
- Network management from a Public Switched Telephone Network PSTN perspective.
- Network management systems in enterprise networks.
- Overview of Telecommunication Management Network TMN for improved telecommunication systems integration.

#### Conclusion

This course equips participants with a thorough understanding of telecommunication system engineering and the practical application of these principles in real-world scenarios. By learning about advanced telecommunication systems, such as digital transmission, data communications, and network management, participants will be prepared to design, implement, and manage complex telecommunications projects. This knowledge will be vital for professionals seeking to excel in areas like business telecommunication systems, system engineering, and telecommunications network integration.

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