

Microwave Transmission Link Design & Network Planning

Telecom Engineering
Berlin (Germany)
08 - 12 Sep 2025

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Microwave Transmission Link Design & Network Planning

Ref: 321422_130169 **Date:** 08 - 12 Sep 2025 **Location:** Berlin (Germany) **Fees:** 4200 **Euro**

Course Description

This intensive 5-day course provides a comprehensive understanding of microwave transmission link design and network planning. Participants will learn essential principles of microwave propagation, link budget analysis, frequency planning, and network optimization techniques. The course combines theoretical knowledge with practical exercises to ensure a well-rounded learning experience.

Learning Objectives

- Understand microwave propagation principles and their impact on link design
- Master link budget calculations and performance analysis techniques
- Develop skills in frequency planning and interference mitigation
- Learn to optimize microwave networks for capacity and reliability
- Gain practical experience using industry-standard tools and software

Course Modules

Day 1: Fundamentals of Microwave Transmission

- Introduction to microwave communications
- Microwave propagation principles
- Antenna theory and selection
- Free space path loss and atmospheric effects

Day 2: Link Budget Analysis and Performance

- Link budget components and calculations
- Fade margin and availability prediction
- Modulation techniques and adaptive modulation
- Error performance and quality of service

Day 3: Frequency Planning and Management

- Frequency allocation and licensing
- Channel arrangements and polarization
- Interference analysis and mitigation
- Frequency reuse strategies

Day 4: Network Planning and Optimization

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- Network topology design
- Capacity planning and traffic engineering
- Reliability and redundancy considerations
- Network management systems

Day 5: Advanced Topics and Practical Applications

- High-capacity and long-haul link design
- Microwave backhaul for mobile networks
- Software tools for link design and network planning
- Case studies and real-world scenarios

Practical Wins for Participants

- Ability to design and optimize microwave links for various applications
- Proficiency in using industry-standard tools for link budget analysis
- Skills to develop efficient frequency plans and mitigate interference
- Capability to plan and optimize large-scale microwave networks

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