Satellite Communication Systems Planning & Coordination

1 – 5 March 2027
Barcelona (Spain)



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Ref: 3284_130530 **Date:** 1 – 5 March 2027 **Location:** Barcelona (Spain) **Fees:** 5900 GBP

Introduction

As satellite communication systems continue to evolve, we are witnessing a revolution that is poised to reshape the industry in the near future. From basic satellite communication systems to the latest advancements in satellite technology, the industry is rapidly transforming. This course is designed to cover the most recent developments in satellite communication systems, providing participants with an in-depth understanding of key concepts such as satellite coordinate systems, network topologies, and VSAT technologies. Whether you're looking to understand what a satellite communication system entails, or you're aiming to enhance your skills in satellite communication systems design, this course is tailored to equip you with the necessary tools for success.

Course Objectives

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

- Introduction to Satellite Communication Systems: Gain a fundamental understanding of satellite communication systems, their components, and how they operate within modern communication networks.
- Explore Satellite Band Frequencies: Learn about the different satellite communication bands e.g., L-band, Ku-band, Ka-band, their applications, and importance in satellite communication.
- Examine Security Risks in Satellite Systems: Understand the potential security risks involved in satellite communications, focusing on AAA Authentication, Authorization, Accounting and measures to mitigate them.
- Learn About Wireless LAN & Other Access Technologies: Delve into the relationship between wireless LAN technologies and satellite systems, and explore emerging access methods for satellite communications.
- Understand Link Budgeting for Satellite Communication: Learn how to calculate link budgets for satellite communication systems to optimize signal strength and communication quality.



Course Outlines

Day 1: Introduction to Satellite Communication Systems

- Introduction to Satellite Communication: Understand the foundations of satellite communication systems, and the role they play in global connectivity.
- Advanced Satellite Communication Systems: Explore cutting-edge developments in satellite technology training, and their implications for communication systems.
- Multiple Access Techniques: Study various access methods such as FDMA, TDMA, CDMA, and random access, and how they impact satellite network operations.
- Digital Modulation Techniques: Understand amplitude shift keying ASK, frequency shift keying FSK, binary phase shift keying BPSK, and quadrature phase shift keying QPSK in satellite communication systems.
- Data Rate vs Baud Rate: Learn the differences between data rate and baud rate, and how these affect satellite communication performance.

Day 2: Earth Station Antennas

- Earth Station Antennas: Study the key components of earth station antennas and their function in satellite communication systems design.
- Types of Antennas: Explore different types of satellite antennas, including SNG antennas, flyaway antennas, and maritime antennas.
- Pointing/Tracking: Learn the techniques used for antenna pointing and tracking, which are essential for maintaining a stable satellite connection.

Day 3: Satellite Band Frequencies

- Understanding Satellite Frequencies: Gain insight into satellite frequency bands like L-band, C-band, Ku-band, and Ka-band, and their specific uses in satellite communication systems.
- Small Antennas at Ku Band: Study the application of small antennas operating at the Ku-band and understand their role in modern satellite communications.
- Electromagnetic Spectrum: Learn about the broader electromagnetic spectrum, the radio spectrum, and how they are allocated for satellite systems.
- EIRP Density Limitations: Understand EIRP Effective Isotropic Radiated Power density limitations as defined by organizations such as FCC, Intelsat, and ITU.



Day 4: Satellite Communications System Design

- Satellite System Design: Dive into the process of satellite systems design, focusing on key components like payloads, spacecraft, and earth station engineering.
- Link Budgets: Master the concept of link budgets for satellite systems, ensuring proper signal strength and communication efficiency.
- Propagation Interference and Regulation: Understand how propagation interference impacts satellite communication and the regulatory environment surrounding satellite systems.
- Satellite Network Coordination: Learn how frequency sharing works between GSO FSS satellite networks, and how to manage coordination in both planned and unplanned bands.

Day 5: Orbit Types & Spectrum Allocations for Satellite Systems

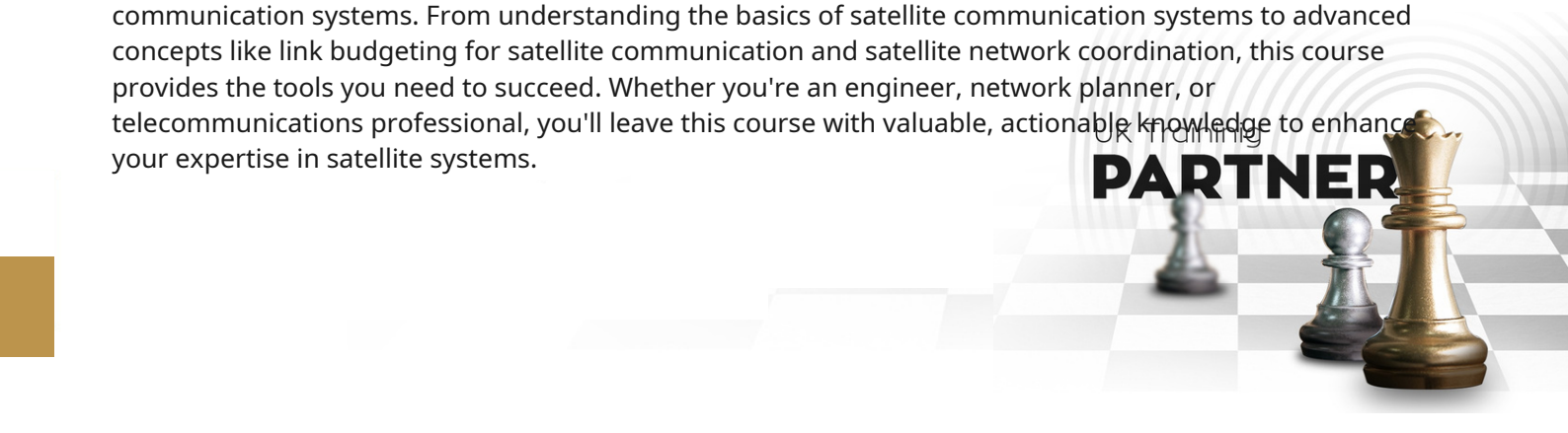
- Orbit Types: Understand the different orbit types GEO, LEO, MEO, HEO, and how they influence satellite link budgets and system design.
- Link Budgets for Multiple Links: Learn how to calculate and optimize link budgets for both single and multiple satellite communication links.
- Effects of Propagation Delay: Explore the impact of propagation delay on satellite communication, especially for long-distance satellite links.
- Spectrum Allocations: Understand the principles of spectrum allocation for satellite systems, ensuring the efficient use of radio frequencies.

Why Attend This Course: Wins & Losses!

- Comprehensive Satellite Communication Training: This Satellite Communication Systems course covers everything from basic theory to advanced system design, making it a comprehensive training program for professionals looking to excel in the satellite industry.
- Gain a Deep Understanding of Satellite Technologies: By participating in this course, you'll be well-equipped to tackle complex challenges in satellite communication systems, including link budget calculations and understanding satellite coordinate systems.
- Enhance Your Career with Certification: Upon completing the course, you'll have the opportunity to earn a satellite communication certification, which will enhance your credibility and open up new career opportunities in satellite management systems and satellite communication systems design.
- Practical, Hands-on Knowledge: Learn through practical applications and real-world case studies, including topics like Activity-Based Intelligence ABI and payload technology evolution, to ensure you're prepared for the future of satellite communication systems.

Conclusion

This satellite communication training course is your gateway to mastering the intricacies of satellite communication systems. From understanding the basics of satellite communication systems to advanced concepts like link budgeting for satellite communication and satellite network coordination, this course provides the tools you need to succeed. Whether you're an engineer, network planner, or telecommunications professional, you'll leave this course with valuable, actionable knowledge to enhance your expertise in satellite systems.



Take the next step in your career and ensure you're at the forefront of satellite technology and communications innovations. Don't miss this opportunity to expand your skill set and become a certified expert in satellite communication systems.

