BLACKBIRD FOR TRAINING

# Advance Satellite Communication Systems

19 – 23 July 2027
Barcelona (Spain)



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**Ref:** 3254347_166453 **Date:** 19 – 23 July 2027 **Location:** Barcelona (Spain) **Fees:** 5900 GBP

## Introduction

In an era of rapid technological advancement, satellite communication systems have become essential in enabling global connectivity across vast distances. This satellite communication course offers a deep dive into the advanced satellite communications technologies and methodologies that are driving innovation in this field. Participants will gain an understanding of the principle of satellite communication, the advantages of satellite communication, and how satellite communication devices are revolutionizing industries worldwide. This course combines theoretical knowledge with practical applications to prepare professionals for the evolving landscape of satellite communication solutions.

## Course Objectives

- Understand the fundamental principles and concepts underlying advanced satellite communications.
- Explore the latest advancements in satellite communication technology, including next-generation satellite communication devices, satellite design, propulsion systems, and power management.
- Learn about advanced communication protocols and modulation techniques used in satellite communication services.
- Gain insights into satellite signal processing, including error correction coding and modulation schemes.
- Examine the design and implementation of satellite networks, focusing on inter-satellite links and ground station configurations.
- Develop skills to analyze, troubleshoot, and optimize complex satellite communication systems.

## Course Outlines

### Day 1: Fundamentals of Satellite Communication Systems

- Introduction to satellite communication: history, evolution, and significance.
- Basics of satellite orbits and constellations.
- Overview of satellite subsystems: payload, propulsion, power, and attitude control.
- Introduction to satellite communication basics: link budget analysis and how do satellites communicate.



## Day 2: Advanced Satellite Technologies

- Next-generation satellite design: miniaturization, modularization, and reconfigurability.
- Advanced propulsion systems for maneuverability and orbit control.
- Power generation and management in space.
- Overview of satellite antennas: types, characteristics, and deployment considerations.

## Day 3: Communication Protocols and Modulation Techniques

- Overview of communication protocols in satellite systems: TDMA, CDMA, FDMA.
- Advanced modulation techniques: QPSK, 8PSK, QAM.
- Forward Error Correction FEC coding for error detection and correction.
- Adaptive coding and modulation ACM for dynamic link adaptation.

## Day 4: Satellite Signal Processing

- Satellite signal propagation: path loss, atmospheric effects, and noise.
- Digital modulation and demodulation techniques.
- Error correction coding: convolutional codes, Reed-Solomon codes, turbo codes.
- Carrier recovery and synchronization in satellite communication.

## Day 5: Satellite Networks and System Integration

- Design principles of satellite networks: GEO, MEO, and LEO constellations.
- Inter-satellite links ISLs and satellite-ground station communication.
- Ground station configuration and operation.
- Case studies and practical exercises in satellite system design and optimization.

# Why Attend this Course: Wins & Losses!

- Acquire a satellite communication certification that positions you as a satellite communication specialist.
- Learn from industry experts and gain practical skills to become the best satellite communicator.
- Understand the benefits of satellite communication and how to leverage them in various industries.
- Stay ahead in your career by mastering the latest satellite communication solutions and technologies.

# Conclusion

By the end of this course, participants will have gained a comprehensive understanding of satellite communication technologies, including the principles of satellite communication, the latest satellite communication devices, and advanced satellite communications methodologies. With a strong foundation in satellite communication basics, participants will be equipped to optimize, troubleshoot, and innovate within satellite communication systems.



**This course not only provides technical expertise but also offers a pathway to becoming a certified satellite communication specialist, ready to excel in this dynamic and critical field.**

