

Design and Operation of Space Systems

London (UK)

29 September - 3 October 2025

UK Training

PARTNER



Design and Operation of Space Systems

Code: AV28 From: 29 September - 3 October 2025 City: London (UK) Fees: 5100 Pound

Introduction

As global reliance on satellite technology increases, mastering the principles of space mission design and operations has become a strategic imperative.

This course offers a comprehensive and advanced-level exploration of how space systems are designed, operated, and managed in both commercial and military contexts.

Participants will explore the architecture of modern satellites, delve into orbital mechanics, analyze Non-Geostationary Orbit (NGSO) satellites, and evaluate the role of space communications, AI in space systems, and emerging technologies in driving next-generation space capabilities.

The course also addresses pressing issues such as space sustainability and space domain awareness.

Course Objectives

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

- Grasp the fundamentals of space mission design and understand the impact of the space environment.
- Identify and analyze key satellite subsystems and their operational functions.
- Understand the dual-use nature of space technology for military and commercial applications.
- Evaluate the architecture, advantages, and limitations of NGSO satellites, including LEO, MEO, and polar orbits.
- Explain the structure and challenges of non-GEO satellite communications and supporting ground infrastructure.
- Review current and future trends such as AI in space, autonomous systems, and space sustainability regulations.

Course Outlines

Day 1: Introduction to Space Mission Design

- Overview of space system components.
- Basics of orbital mechanics and trajectory planning.
- Environmental factors affecting spacecraft design.
- Fundamentals of mission planning and launch dynamics.

Day 2: Spacecraft Technology

- Satellite structures and thermal control systems.
- Propulsion systems: chemical, electric, and hybrid.
- Satellite communication and power systems.
- Trade-offs in subsystem design and selection.

Day 3: Subsystems and Integration



- Attitude Determination and Control System ADCS.
- Onboard computers and space-grade electronics.
- Payload design and system integration strategies.
- Reliability, fault tolerance, and redundancy management.

Day 4: NGSO Satellites and Military Applications

- Comparing NGSO vs. GEO satellites.
- LEO, MEO, and polar orbit dynamics.
- Coverage, latency, and mega-constellation implications.
- Non-GEO satellite communication architecture: frequency bands and infrastructure.
- Applications: satellite internet, intelligence, surveillance, and reconnaissance.
- Strategic use of space in defense and cybersecurity operations.

Day 5: Operations and Future Trends

- Mission operations: telemetry, monitoring, and control.
- Space domain awareness and tracking systems.
- Integration of artificial intelligence in space systems and autonomous spacecraft.
- Space sustainability: debris mitigation, regulatory frameworks, and environmental stewardship.
- Case studies from real-world space missions.

Why Attend This Course? Wins & Losses!

- Master the full lifecycle of space mission design from planning to operations.
- Gain deep insights into satellite subsystems, including propulsion, payload, and communication.
- Understand the value and strategic use of NGSO satellites in modern space networks.
- Stay ahead with trends in AI in space and autonomous spacecraft management.
- Learn about the future of space sustainability, regulations, and orbital debris handling.
- Apply knowledge through real-world case studies in military and commercial missions.

Conclusion

This course is a gateway to mastering the art and science of space mission design and operations.

Whether you're involved in engineering, defense, policy, or technology development, you'll leave equipped with critical tools to shape the future of space systems architecture, drive innovation in satellite communication, and contribute to a more sustainable space environment.

Step into the future of aerospace leadership—where systems thinking meets AI-driven orbital precision.



Blackbird Training Cities

Europe



Malaga (Spain)



Sarajevo (Bosnia and Herzegovina)



Oporto (Portugal)



Glasgow (Scotland)



Edinburgh (UK)



Oslo (Norway)



Annecy (France)



Bordeaux (France)



Copenhagen (Denmark)



Birmingham (UK)



Lyon (France)



Moscow (Russia)



Stockholm (Sweden)
(Netherlands)



Podgorica (Montenegro)



Batumi (Georgia)



Salzburg (Austria)



Florence (Italy)



Rotterdam



London (UK)



Istanbul (Turkey)



Amsterdam



Düsseldorf (Germany)



Paris (France)



Athens (Greece)



Barcelona (Spain)



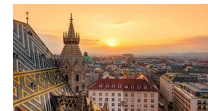
Munich (Germany)



Geneva (Switzerland)



Prague (Czech)



Vienna (Austria)



Rome (Italy)



Brussels (Belgium)



Madrid (Spain)



Berlin (Germany)



Lisbon (Portugal)



Zurich (Switzerland)



Manchester (UK)



Milan (Italy)

UK Training
PARTNER



Blackbird Training Cities

USA & Canada



Los Angeles (USA)



Orlando, Florida (USA)



Online



Phoenix, Arizona (USA)



Houston, Texas (USA)



Boston, MA (USA)



Washington (USA)



Miami, Florida (USA)



New York City (USA)



Seattle, Washington (USA)



Washington DC (USA)



In House



Jersey, New Jersey (USA)



Toronto (Canada)

ASIA



Baku (Azerbaijan)
(Thailand)



Maldives (Maldives)



Doha (Qatar)



Manila (Philippines)



Bali (Indonesia)



Bangkok



Beijing (China)



Singapore (Singapore)



Sydney



Tokyo (Japan)



Jeddah (KSA)



Riyadh (KSA)



Melbourne (Australia)
(Kuwait)



Phuket (Thailand)



Shanghai (China)



Dubai (UAE)



Kuala Lumpur (Malaysia)



Kuwait City



Seoul (South Korea)



Pulau Ujong (Singapore)



Irbid (Jordan)



Jakarta (Indonesia)



Amman (Jordan)



Beirut



Blackbird Training Cities

AFRICA



Kigali (Rwanda)



Cape Town (South Africa)



Accra (Ghana)



Lagos (Nigeria)



Marrakesh (Morocco)



Nairobi (Kenya)



Zanzibar (Tanzania)



Tangier (Morocco)



Cairo (Egypt)



Sharm El-Sheikh (Egypt)



Casablanca (Morocco)



Tunis (Tunisia)



Blackbird Training Clients

 MANNAI CORPORATION MANNAI Trading Company WLL, Qatar	 GAC UNE FILIALE D' EGA Alumina Corporation Guinea	 Booking.com Booking.com Netherlands	 OXFAM Oxfam GB International Organization, Yemen	 Capital Markets Authority Kuwait
 Waltersmith Waltersmith Petroman Oil Limited Nigeria	 QNB Qatar National Bank (QNB), Qatar	 Qatar Foundation Qatar	 AFRICAN UNION ADVISORY BOARD ON CORRUPTION Tanzania	 KFAS KFS Kuwait
 Reserve Bank of Malawi Malawi	 Central Bank of Nigeria Nigeria	 Ministry of Interior Kingdom of Saudi Arabia KSA	 Mabruk Oil Company Libya	 Saudi Electricity Company KSA
 BPKH Badan Pengelola Keuangan Haji BADAN PENGELOLA KEUANGAN Haji, Indonesia	 NATO Italy	 ENI ENI CORPORATE UNIVERSITY, Italy	 GULF BANK Gulf Bank Kuwait	 General Organization for Social Insurance KSA
 Defence Space Administration Nigeria	 National Industries Group (Holding), Kuwait	 Hamad Medical Corporation Qatar	 USAID Pakistan	 STC STC Solutions, KSA
 North Oil Company North Oil company,	 EKO Electricity	 OMAN BROADBAND Oman Broadband	 UNITED NATIONS UN.	 Authority for Electricity Regulation, Oman Authority for

UK Training
PARTNER



Blackbird Training Categories

Management & Admin

Entertainment & Leisure
Professional Skills
Finance, Accounting, Budgeting
Media & Public Relations
Project Management
Human Resources
Audit & Quality Assurance
Marketing, Sales, Customer Service
Secretary & Admin
Supply Chain & Logistics
Management & Leadership
Agile and Elevation

Technical Courses

Artificial Intelligence (AI)
Hospital Management
Public Sector
Special Workshops
Oil & Gas Engineering
Telecom Engineering
IT & IT Engineering
Health & Safety
Law and Contract Management
Customs & Safety
Aviation
C-Suite Training



International House 185 Tower Bridge
Road London SE1 2UF United Kingdom



+44 7401 1773 35
+44 7480 775526



Sales@blackbird-training.com



www.blackbird-training.com

UK Training

PARTNER

