

Advanced Mechanical Systems Engineering & Future Technologies

Barcelona (Spain)

3 - 7 August 2026

UK Traininig

PARTNER



Advanced Mechanical Systems Engineering & Future Technologies

Code: IT28 From: 3 - 7 August 2026 City: Barcelona (Spain) Fees: 5100 Pound

Introduction

Modern industries are rapidly evolving, and the demand for advanced mechanical systems has never been higher. This course is designed for engineers, technical specialists, and maintenance professionals seeking to strengthen their expertise in mechanical systems engineering and keep pace with future technologies.

The program emphasizes innovation, smart technologies, IoT, and digital twins, as well as sustainable engineering solutions. Participants will explore advanced system integration methods, predictive maintenance, diagnostics, and the role of automation, robotics, and AI in shaping the future of mechanical engineering and Industry 5.0.

Course Objectives

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

- Understand advanced concepts in mechanical systems design and operation.
- Integrate mechanical systems with smart technologies, IoT, and digital solutions.
- Apply advanced diagnostics, predictive maintenance, and prescriptive maintenance strategies.
- Explore the role of automation, robotics, and AI in modern industries.
- Evaluate sustainability practices, green engineering, and emerging technologies.
- Enhance system reliability and optimize performance in complex environments.
- Lead initiatives in Industry 5.0 and future-ready mechanical systems.

Course Outlines

Day 1: Advanced Mechanical Systems Foundations

- Modern principles of mechanical systems design.
- Advanced materials and manufacturing technologies.
- High-performance system dynamics and control.
- Failure modes and reliability engineering.
- Safety, compliance, and risk management.

Day 2: Systems Integration & Smart Technologies

- Integration of mechanical, electrical, and electronic systems.
- Embedded sensors and real-time monitoring.
- Smart actuators and adaptive systems.
- Cyber-physical systems and digital twins.
- Standards and protocols for integrated systems.

Day 3: Advanced Maintenance & Diagnostics



- Predictive and prescriptive maintenance strategies.
- Condition monitoring technologies and diagnostic tools.
- Root cause analysis RCA in complex systems.
- Reliability-centered maintenance RCM 2.0.
- Case studies in advanced fault diagnostics.

Day 4: Automation, Robotics & AI Applications

- Role of robotics in mechanical systems.
- AI-driven control systems and performance optimization.
- Autonomous machines and self-diagnosing systems.
- Human-machine collaboration cobots.
- Industry case studies in automation and AI.

Day 5: Future Trends & Sustainability in Mechanical Systems

- Green engineering and energy-efficient technologies.
- Additive manufacturing and 3D printing in mechanical systems.
- IoT-enabled smart factories and Industry 5.0 applications.
- Emerging challenges and opportunities in mechanical engineering.
- Course review, key takeaways, and open Q&A.

Why Attend this Course: Wins & Losses!

- Gain expertise in advanced mechanical systems engineering.
- Learn how to apply predictive and prescriptive maintenance to optimize performance.
- Develop advanced diagnostics skills for fault analysis and reliability.
- Integrate mechanical systems with IoT, smart technologies, and digital twins.
- Explore practical applications of automation, robotics, and AI.
- Understand sustainability through green engineering and energy efficiency.
- Build future-ready skills aligned with Industry 5.0.
- Improve decision-making with exposure to real-world case studies.

Conclusion

The Advanced Mechanical Systems Engineering & Future Technologies course equips professionals with advanced knowledge and practical skills to thrive in the era of Industry 4.0 and 5.0. Covering everything from smart technologies, IoT, and digital twins to predictive maintenance, automation, robotics, and AI, this program ensures participants are prepared to design, integrate, and sustain future-proof mechanical systems.

By focusing on sustainability, reliability, and green engineering, the course not only enhances technical expertise but also empowers participants to lead innovation in industries where performance, safety, and efficiency are paramount.



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)



Podgorica (Montenegro)



Batumi (Georgia)



Salzburg (Austria)



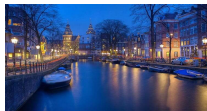
Florence (Italy)



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)



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 Trading
Company WLL,
Qatar



Alumina Corporation
Guinea



Booking.com
Netherlands



Oxfam GB International
Organization,
Yemen



Capital Markets
Authority,
Kuwait



Waltersmith Petroman Oil Limited
Nigeria



Qatar National Bank
(QNB),
Qatar



Qatar Foundation,
Qatar



AFRICAN UNION ADVISORY
BOARD ON CORRUPTION,
Tanzania



KFAS
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



BADAN PENGELOLA
KEUANGAN Haji,
Indonesia



NATO
Italy



ENI CORPORATE
UNIVERSITY,
Italy



Gulf Bank
Kuwait



المؤسسة العامة للتأمينات الاجتماعية
General Organization for
Social Insurance
KSA



Defence Space Administration
Nigeria



National Industries
Group (Holding),
Kuwait



Hamad Medical
Corporation,
Qatar



USAID
Pakistan



STC Solutions,
KSA



North Oil company,



EKO Electricity



Oman Broadband



UNITED NATIONS
UN.



هيئة تنظيم الكهرباء - عمان
AUTHORITY FOR ELECTRICITY REGULATION, OMAN
Authority for



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

