Airport Engineering and Facilities Maintenance Management Training Course



19 - 23 Oct 2026

Düsseldorf

5900 € (Per Person)

Ref: #AVI2770_79426

Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of the principles and practices of modern airport engineering and facilities maintenance management. In an era of rapid aviation growth and technological advancement, the effective design, construction, and upkeep of airport infrastructure are paramount to ensuring safety, efficiency, and passenger satisfaction. This program, offered by BIG BEN Training Center, is meticulously designed to bridge the critical gap between theoretical engineering concepts and the practical realities of day-to-day maintenance operations. Participants will delve into the entire lifecycle of airport facilities, from master planning and pavement design to terminal systems management and regulatory compliance. Drawing on foundational principles established by leading academics like Robert Horonjeff in his seminal work, "Planning and Design of Airports," the course integrates international standards from ICAO and FAA. It equips professionals with the strategic skills needed for robust airport asset management, proactive maintenance scheduling, and the implementation of effective Safety Management Systems (SMS), ensuring that airport infrastructure remains resilient, sustainable, and prepared for future aviation challenges.

Target Audience / This training course is suitable for:

- Airport Engineers and Planners.
- Facilities and Maintenance Managers.
- Airport Operations Managers and Supervisors.
- Civil Engineers working in the aviation sector.
- Aviation Project Managers.
- Consultants in airport design and infrastructure.
- Regulatory personnel from Civil Aviation Authorities.
- Technical staff involved in airport maintenance.

Target Sectors and Industries:

- Airport Authorities and Operators.
- Civil Aviation Authorities and Regulatory Bodies.
- Engineering and Construction Firms specializing in aviation.
- Aviation Consulting Companies.
- Ground Handling and Airport Service Providers.
- Government agencies, including military and defense airbases.
- Airlines' facilities management divisions.

Target Organizations Departments:

- Engineering and Development.
- Maintenance and Facilities Management.
- Airport Operations.
- Planning and Strategy.
- Asset Management.
- Safety and Compliance.
- Projects and Infrastructure.
- Technical Services.

Course Offerings:

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

- Analyze the key components of an airport master plan and its strategic importance.
- Apply ICAO and FAA standards to airfield design, including runways, taxiways, and aprons.
- Evaluate different types of airport pavement and develop effective maintenance strategies.
- Manage the complex systems within terminal buildings, including HVAC and baggage handling.
- Implement a comprehensive airport asset management program for long-term sustainability.
- Develop and oversee preventive and predictive maintenance schedules for critical infrastructure.
- Integrate Safety Management Systems (SMS) into daily maintenance and operations.
- Assess environmental impacts and incorporate sustainable practices in airport engineering.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can immediately apply their learning in a professional context. We move beyond traditional lectures by incorporating a dynamic blend of expert-led presentations, real-world case studies of international airports, and collaborative group workshops. Participants will engage in practical exercises, such as developing a pavement maintenance plan or mapping passenger flow in a terminal design. Interactive sessions will encourage the sharing of experiences and challenges, fostering a rich learning environment where peers learn from one another. The course emphasizes problem-solving through simulated scenarios related to airport facilities management and operational disruptions. Our expert instructors facilitate discussions, provide personalized feedback, and guide participants through complex topics like aerodrome certification and Safety Management System implementation. This hands-on, participant-centered approach ensures a deep and lasting understanding of airport engineering and maintenance principles, equipping attendees with both the knowledge and the confidence to excel.

Course Agenda (Course Units):

Unit One: Fundamentals of Airport Planning and Design

- Introduction to Airport Engineering and its Core Disciplines.
- The Role of ICAO, FAA, and National Civil Aviation Authorities.
- Airport Master Planning Process and Strategic Objectives.
- Aircraft Characteristics and their Impact on Airport Design.
- Airport Site Selection and Environmental Impact Assessment.
- Forecasting Aviation Demand and Capacity Analysis.
- Introduction to Airport Components: Airside and Landside.

Unit Two: Airside Infrastructure Engineering and Management

- Runway and Taxiway Geometric Design Standards.
- Apron Layout, Gate Configuration, and Aircraft Parking.
- Airfield Pavement Design: Flexible and Rigid Pavements.
- Pavement Materials, Construction, and Quality Control.
- Pavement Condition Index (PCI) and Maintenance Strategies.
- Airfield Drainage Systems Design and Maintenance.
- Airfield Lighting, Signage, and Navigational Aids.

Unit Three: Landside Facilities and Terminal Building Engineering

- Airport Terminal Planning and Design Concepts.
- Passenger Flow Analysis and Level of Service (LoS) Metrics.
- Baggage Handling Systems (BHS) Engineering and Maintenance.
- Terminal Building Utilities: HVAC, Power, and Water Systems.
- Ground Access Systems: Roads, Parking Facilities, and Public Transport Integration.
- Airport Security Systems and Infrastructure Requirements.
- Fire Safety and Emergency Response Facilities.

Unit Four: Airport Facilities Maintenance Management

- Principles of Asset Management for Airport Infrastructure.
- Developing Preventive and Predictive Maintenance Programs.
- Corrective Maintenance and Emergency Repair Procedures.
- Computerized Maintenance Management Systems (CMMS).
- Maintenance of Pavements, Airfield Lighting, and Markings.
- Managing Maintenance for Terminal Buildings and Systems.
- Budgeting, Resource Planning, and Outsourcing Maintenance Activities.

Unit Five: Safety, Sustainability, and Future Trends

- Airport Safety Management Systems (SMS) Implementation.
- Aerodrome Certification and Regulatory Compliance.
- Wildlife Hazard Management Programs.
- Sustainable Airport Design and Green Initiatives.
- Noise Abatement Procedures and Community Relations.
- Introduction to Smart Airports and Digital Transformation.
- Future Challenges: Drones, Urban Air Mobility, and Climate Resilience.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Considering the rise of urban air mobility (UAM) and drone technology, how must traditional airport engineering and maintenance paradigms evolve to accommodate these new forms of aviation safely and efficiently?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by offering a holistic and integrated perspective that seamlessly connects the disciplines of airport engineering with the practical demands of facilities maintenance management. Unlike narrowly focused programs that address either design or upkeep in isolation, our curriculum is built on the understanding that these two areas are intrinsically linked. We provide a comprehensive lifecycle approach, guiding participants from the initial master plan to the long-term asset management and eventual decommissioning of airport infrastructure. The content is deeply rooted in current international standards from ICAO and FAA, ensuring global relevance and applicability. Furthermore, the course places a strong emphasis on real-world application through the extensive use of case studies from diverse international airports, allowing participants to analyze successes and failures in a controlled learning environment. It moves beyond theory to tackle pressing contemporary issues such as sustainability, the integration of smart technologies, and preparing infrastructure for future aviation trends, equipping professionals not just with knowledge, but with the strategic foresight needed to manage the airports of tomorrow.