Airport Systems Planning & Design

16 – 20 August 2027
Toronto (Canada)

UK Trainig
PARTNER



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Ref: 328729_226448 **Date:** 16 – 20 August 2027 **Location:** Toronto (Canada) **Fees:** 5900 GBP

Why This Course

Airports are complex systems that must balance safety, efficiency, capacity, sustainability, and passenger experience.

Effective planning and design are critical to ensuring that airports meet operational needs today while accommodating future growth and technological innovation.

This program provides participants with a comprehensive understanding of airport system planning and design principles, combining strategic, operational, and engineering perspectives. It draws on ICAO, FAA, and IATA standards to equip participants with the knowledge and tools to design airports that are safe, efficient, and future-ready.

What You'll Learn and Practice

By joining this program, you will:

- Understand the key principles of airport planning and systems integration.
- Learn the processes for master planning, capacity assessment, and demand forecasting.
- Explore the design and functionality of airside and landside components.
- Gain insights into sustainable and smart airport design trends.
- Develop practical skills for evaluating airport layouts and operational performance.

The Program Flow

Day 1: Introduction to Airport Systems and Master Planning

- The airport as a system: functions, components, and interrelationships.
- Overview of international regulatory frameworks ICAO, FAA, EASA.
- The airport master plan — objectives, phases, and stakeholders.
- Forecasting air traffic demand and planning for future growth.
- Case study: examining airport master plans from global hubs.



Day 2: Airside Planning and Design

- Design principles of runways, taxiways, and aprons.
- Airfield capacity, configuration, and separation standards.
- Aircraft characteristics and their influence on geometric design.
- Safety areas, obstacle limitation surfaces, and operational efficiency.
- Workshop: evaluating airside layout options for a medium-sized airport.

Day 3: Landside Planning and Terminal Design

- Passenger terminal concepts: linear, pier, satellite, and modular designs.
- Passenger flow management and terminal capacity optimization.
- Ground access, parking, and intermodal transportation integration.
- Baggage handling systems and terminal automation technologies.
- Group activity: designing a conceptual terminal layout.

Day 4: Airport Support Facilities and Environmental Considerations

- Planning for support areas: cargo, maintenance, fuel farms, and emergency services.
- Utility and infrastructure systems — power, water, waste, and ICT.
- Environmental impact assessment EIA and noise management.
- Integrating sustainability and green airport design principles.
- Practical exercise: identifying sustainability strategies for an airport expansion project.

Day 5: Smart Airports and Future Trends

- Digital transformation in airport operations — AI, IoT, and automation.
- Planning for resilience, flexibility, and crisis management.
- Economic, social, and policy dimensions of airport development.
- Case studies: innovative airport design and technology adoption worldwide.
- Action workshop: developing a conceptual airport design improvement plan.

Individual Impact

- Gain a deep understanding of the technical and strategic aspects of airport design.
- Strengthen the ability to analyze and optimize airport systems holistically.
- Enhance problem-solving and planning capabilities in real-world contexts.
- Build awareness of sustainability and innovation in modern airport design.
- Develop confidence in contributing to airport planning and development projects.



Work Impact

- Improve long-term airport planning, design, and investment decision-making.
- Strengthen capacity to balance safety, efficiency, and sustainability.
- Support regulatory compliance with international aviation standards.
- Foster innovation through smart, integrated airport system design.
- Enhance operational readiness and passenger satisfaction.

Training Methodology

The program emphasizes applied learning, combining technical knowledge with case studies and hands-on exercises.

Learning methods include:

- Real-world airport case studies and design simulations.
- Group workshops on airside and terminal layout development.
- Interactive discussions on sustainability and technology integration.
- Scenario-based exercises using international standards.
- Toolkits and templates for airport planning and system evaluation.

Beyond the Course

Upon completion, participants will be equipped to plan, evaluate, and design airports that meet global safety, efficiency, and sustainability standards.

They will leave with practical insights, frameworks, and tools to contribute effectively to airport development and modernization projects worldwide.

