
Postgraduate Certificate in Airport Design and Construction

Airport Planning and Design

Airport Planning and Design involves the careful consideration of various key terms and vocabulary in order to create safe, efficient, and functional airports. In this postgraduate certificate program, students will learn about the following essential concepts:

1. **Airside** and **Landside**: The airside of an airport refers to the areas that are accessible only to aircraft, personnel with security clearance, and passengers with valid boarding passes. This includes runways, taxiways, aprons, and aircraft parking areas. The landside, on the other hand, refers to the public areas of the airport, such as terminals, parking lots, and transportation centers.
2. **ATC** (Air Traffic Control): ATC is a service provided by ground-based controllers who direct aircraft during takeoff, landing, and taxiing operations. ATC plays a crucial role in maintaining safe distances between aircraft, managing traffic flow, and providing essential information to pilots.
3. **IDS** (Airport Integrated Development System): An IDS is a comprehensive plan that outlines the development of an airport over a long-term period, typically 20 years or more. It includes components such as land use planning, infrastructure development, environmental assessments, and financial projections.
4. **Master Plan**: A Master Plan is a detailed document that outlines the development of an airport over a shorter period, usually 5-10 years. It includes specific projects, such as terminal expansions, runway improvements, and land acquisition.
5. **Runway Design Group**: The Runway Design Group is a team of experts who determine the optimal location, orientation, and dimensions of runways based on factors such as weather patterns, airspace constraints, and community impact.
6. **RSA** (Runway Safety Area): The RSA is a clear area around a runway that provides a buffer zone for aircraft in the event of an aborted takeoff or missed approach. The RSA is designed to minimize the risk of damage to aircraft or injury to personnel.
7. **apron**: An apron is a paved area that provides access to aircraft gates and allows for aircraft parking, maintenance, and loading/unloading of passengers and cargo.
8. **Terminal Building**: The terminal building is the facility where passengers check in for their flights, go through security screening, and wait for their flights in gate areas. It also includes baggage claim areas, ticketing counters, and other amenities.
9. **BHS** (Baggage Handling System): The BHS is a system of conveyors, sorting equipment, and automation that moves baggage from check-in counters to aircraft holds.
10. **EPD** (Environmental Planning and Design): EPD involves the consideration of environmental factors in the planning and design of airports. This includes noise mitigation, air quality monitoring, wildlife management, and sustainable design practices.
11. **GIS** (Geographic Information System): GIS is a computer system that captures, stores, and analyzes geographic information. It is used in airport planning and design to create maps, analyze land use patterns, and make informed decisions about infrastructure development.
12. **A-CDM** (Airport Collaborative Decision Making): A-CDM is a process that enhances collaboration

between airport stakeholders, such as airlines, air traffic control, and ground handling agencies. It improves the efficiency of airport operations by reducing delays, optimizing resource use, and improving communication.

13. **FIDS** (Flight Information Display System): FIDS is a system of electronic signs and displays that provide flight information to passengers, such as departure times, gate assignments, and boarding instructions.

14. **PKI** (Passenger Kiosk Interface): PKI is a self-service terminal that allows passengers to check in for their flights, print boarding passes, and tag their luggage.

15. **Security Checkpoints**: Security checkpoints are areas where passengers are screened for weapons, explosives, and other prohibited items. They typically include metal detectors, X-ray machines, and physical searches.

16. **Elevated Roadway**: An elevated roadway is a raised roadway that provides access to the airport terminal building for arriving and departing passengers.

17. **Parking Garage**: A parking garage is a multi-level structure that provides parking spaces for vehicles.

18. **Transit Center**: A transit center is a facility that provides transportation connections between different modes of transportation, such as buses, trains, and taxis.

19. **Noise Monitoring Terminal**: A noise monitoring terminal is a system of sensors and monitoring equipment that measures aircraft noise levels and ensures compliance with noise regulations.

In airport planning and design, these key terms and vocabulary are essential for creating safe, efficient, and functional airports. By understanding the various components of an airport and their interrelationships, students can develop comprehensive plans that meet the needs of passengers, airlines, and the surrounding community.

Some practical applications of these concepts include:

* An airport master plan might include the expansion of the terminal building to accommodate increasing passenger traffic, as well as the addition of new gates and apron areas to accommodate larger aircraft.

* In the design of a new runway, the Runway Design Group would consider factors such as the prevailing wind direction, the slope of the land, and the proximity of nearby communities to determine the optimal location and orientation of the runway.

* The implementation of an IDS might involve the acquisition of land for future development, as well as the construction of new infrastructure such as taxiways, aprons, and terminals.

* In the design of a BHS, engineers would consider factors such as the size and layout of the terminal building, the number of passengers expected to use the system, and the types of baggage being handled to determine the optimal configuration of conveyors, sorting equipment, and automation.

* The implementation of A-CDM might involve the installation of new communication systems between airport stakeholders, as well as the development of new procedures for managing traffic flow and optimizing resource use.

* In the design of a security checkpoint, engineers would consider factors such as the volume of passengers expected to pass through the checkpoint, the size and layout of the area, and the types of screening equipment to be used to determine the optimal configuration of metal detectors, X-ray machines, and physical search areas.

* The design of an elevated roadway would take into account factors such as the volume of traffic expected to use the roadway, the slope of the land, and the proximity of nearby buildings to determine the optimal alignment and configuration of the roadway.

Some challenges in airport planning and design include:

- * Balancing the needs of passengers, airlines, and the surrounding community, while minimizing the impact on the environment.
- * Accommodating increasing passenger traffic while maintaining safety and efficiency.
- * Integrating new technologies and systems into existing infrastructure.
- * Ensuring compliance with regulations and standards related to safety, security, and environmental impact.
- * Managing the risks associated with large-scale infrastructure projects.
- * Coordinating the efforts of multiple stakeholders, including airlines, air traffic control, government agencies, and community groups.

In conclusion, airport planning and design is a complex and challenging field that requires a deep understanding of key terms and vocabulary. By mastering these concepts and applying them in practical applications, students can contribute to the development of safe, efficient, and functional airports that meet the needs of passengers, airlines, and the surrounding community.