

**Course Name:**  
Planning & Design of Airports

**Course Number:**  
20582

**Credit:**  
3

**Course Content (outline):**

**1. Introduction & overview**

- a. Aeronautical foundations and specifications
- b. Evolutionary trends in air transport
- c. National and international organizations related to aviation.

**2. Aircraft and flying characteristics related to airport design**

- a. The main and most important features of airplanes as they affected airports
- b. The flight process and the principles of aviation affecting the design and planning of the airport

**3. Air traffic management and control**

**4. Airport site selection**

**5. Airport planning**

- a. airport system plan
- b. Airport master plan
- c. Airport project plan
- d. Demand forecasting methods for airport planning

**6. Airport design**

- Configuration and components of the airports
- Geometric design of the airfield
- Airport classification and design standards
- Runways
- Runway configurations
- Obstacle clearance requirements
- Taxiways and taxilines
- Airport lighting, marking and signage
- Planning and design of the land side division
- Passenger terminals
- Load equipment
- Air cargo facilities
- Access to the airports

**7. Heliports**

**8. Analysis of capacity and delay**

- various methods for calculating capacity and delays in airport

**9. Airport economics, financial planning for airport projects**

**10. Airport environmental planning**

**11. Airline operations and planning**

- Overview of airline economics, markets, demand, pricing, revenue management and operating costs.
- Different levels of airline planning

- Airline planning process
- Fleet planning
- Route planning
- schedule development: frequency planning, timetable development, fleet assignment, aircraft rotation planning, simultaneous Planning
- Optimization models for airline planning: aircraft assignment, airplane routing, aircraft maintenance planning, crew scheduling, other optimization models for airline operations.

**References:**

1. Horronjeff, R., Mckelvey, F. X., Sproule, W. J., Young, S. B., Planning & Design of Airports, 5<sup>th</sup> Edition, McGrew-Hill, 2010.
2. Ashford, N. Mumayiz, S. Wright, P., Airport Engineering, Planning, Design & Development of 21<sup>st</sup> Century Airports, 4<sup>th</sup> Edition, Wiley 2011.
3. Well, A. T. Young, S. B., Airport Planning & Management, 5<sup>th</sup> Edition, McGrew-Hill, 2004
4. Belobaba, P. Odoni, A., Barnhart, C., The Global Airline Industry, John Wiley & Sons, 2009.
5. Bazargan, M., Airline Operations & Scheduling, Second Edition, Ashgate Publishing, 2010.
6. Lecture notes, PowerPoint and articles presented or distributed in the classroom.