# AIRPORT INFRASTRUCTURE

**(Professional Elective-4)**

**II Semester**

Course Code: 19CE2162

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**Prerequisites:--**

**Course Outcomes:**

At the end of the course, the student will be able to

CO1 Describe the different components of airport and aircrafts.

CO2 Analyse the requirements of an airport layout with respect to international regulations.

CO3 Explain the airport runway design.

CO4 Design Taxiways & Aprons.

CO5 Explain the concepts of the terminal service facilities.

**UNIT-I: (10 Lectures)**

**INTRODUCTION** Airport terminology, components of an Aeroplane, Classification and size of airports; Aircraft characteristics. Air traffic control need for ATC, Air traffic control network, Air traffic control aids –enroute aids, landing aids. Airport site location and necessary surveys for site section, airport obstructions.

**Learning outcomes:**

1. Illustrate terminology, classification of Airports (L4)
2. Discuss about Air Traffic Control, Airport Site location selection (L2)
3. Explain the enroute and landing aids for air transport (L2)

**UNIT-II: (10 Lectures)**

**PLANNING:** Airport master plan –FAA recommendations, Regional Planning, ICAO recommendations, Estimation of future airport traffic needs-layout of Airport.

**Learning outcomes:**

1. Illustrate Airport master plan preparation (L4)
2. Discuss about ICAO and FAA recommendations (L2)
3. Calculate the future airport traffic for an Airport (L3)

**UNIT-III: (10 Lectures)**

**RUNWAYS:** Runway orientation – windrose diagram, basic runway length, corrections for elevation, temperature and gradient, runway geometric design, runway details.

**Learning outcomes:**

1. Design Runway Orientations (L6)
2. Design of Runway Length of Airport (L6)
3. Explain the details of runway of an Airport (L2)

**UNIT-IV: (10 Lectures)**

**TAXIWAYS AND APRONS:** Loading aprons –holding aprons –Geometric design standards, exit taxiways –optimal location, design, and fillet and separation clearance.

**Learning outcomes:**

1. Illustrate Loading and Holding Apron (L4)
2. Design of Exit Taxiway (L6)
3. Explain the fillets and sepeartion clearance at the Taxiways (L2)

**UNIT-V: (10 Lectures)**

**OTHER FACILITIES:** Lighting, visual airport marking, airport lighting aids.

**OPERATIONS AND SCHEDULING:** Ground transportation facilities; Airport capacity, runway capacity and delays.

**Learning outcomes:**

1. Illustrate the Airport Lighting (L4)
2. Calculate Airport Capacity, Runway Capacity and delays (L3)
3. Explain the marking on Runway and Taxiway (L2)

**Text Books:**

1. Khanna S.K., Arora M.G., Jain S.S., Airport Planning & Design,1st Edition, Nemch and Bros. Roorkee, 2009
2. Robert Horonjeff, Francis Mc Kelvey, William Sproule and Seth Young, Planning and Design of Airports 5th Edition, 2010.

**References:**

1. Alexander T. Wells, Ed. D & Seth, B. Young, Airport Planning and Management, 5th Edition, 2008
2. Heronjeff, R, Mc Kelvey, F.X, Planning & Design of Airports, 2nd Edition, Mc Graw Hill Book Co, 1994.
3. Norman J. Ashford, Saleh Mumayiz and Paul H. Wright, Planning, Design and Development of 21st Century Airports, 4th Edition, John Wiley &Sons, 2011.
4. Subramian K.P., Highway, Railway, Airport and Harbour Engineering, 1st Edition, Scitech Publications Private Limited, 2013.