AIRPORT PLANNING AND DESIGN
(Professional Elective – V)

Course Code: 20CE1170 **L T P C**
3 0 0 3

Pre-requisites: Surveying, Transportation Engineering

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 and aprons
CO5: Discuss the terminal service facilities

UNIT–I **(10 Lectures)**

AIR TRANSPORTATION:

Airport terminology, component parts of 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 selection, airport obstructions.

Learning outcomes:
1. Explain the basic terminology associated with an airport (L2)
2. Evaluate the need for ATC and various aiding facility for aircraft (L4)
3. Discuss various airport obstructions (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. Explain the preparation of master plan (L2)
2. Illustrate the layout plan of an airport (L3)
3. Evaluate various recommendations of ICAO, FAA (L2)

UNIT–III **(10 Lectures)**

RUNWAYS:

Runway orientation – Wind rose diagram, basic runway length, corrections for elevation, temperature and gradient, runway geometric design, Airport drainage.

Learning outcomes:
1. Explain the wind rose diagram (L2)
2. Compute runway length (L3)
3. Evaluate geometric design requirements of runway (L4)

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. Evaluate various geometric design standards to be followed in designing taxiway (L4)
2. Identify the optimal location of taxiway (L2)
3. Discuss about the purpose of aprons (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. Explain various markings on runway, taxiway etc. (L2)
2. Discuss various lighting aids like VASI, PAPI and their application (L2)
3. Explain the methods for calculating runway capacity, airport capacity and delay (L2)

TEXT BOOKS:

1. Khanna S.K., Arora M.G., Jain S.S., "Airport Planning & Design", 1st Edition, Nem chand Bros. Roorkee, 2009
2. Robert Horonjeff, Francis McKelvey, William Sproule and SethYoung, "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, McKelvey, F.X, "Planning & Design of Airports", 2nd Edition, McGraw 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.