Birla Institute of Technology & Science, Pilani
Hyderabad Campus

ACADEMIC GRADUATE STUDIES AND RESEARCH DIVISION
SECOND SEMESTER 2023-2024

Course Handout (Part -II)

Date: 12.08.2023

In addition to Part-I (General Handout for all courses appended to the timetable), this portion gives further specific details regarding the course.

Course No. **: CE G545**
Course Title **: Airport Planning and Design**
Instructor-in-charge **: Sridhar Raju**

1. Scope & Objective of the course:

Air Transport structure and organization; forecasting air travel demand, trend forecasts and analytical methods; air freight demand; airport system; characteristics of the aircraft; airport capacity and configuration; airport master planning: site selection, layout plan, orientation and length of runway as per ICAO specifications; geometric design of runway taxiway and aprons; structural design of runway and taxiway pavements; airfield pavement drainage; airport runway structural evaluation using Heavy Falling Weight Deflectometer (HFWD), overlay design. Passenger terminal function, passenger and baggage flow, analysis of flow through terminals, parking configurations and apron facilities; air cargo facilities-flow through cargo terminals, airport lighting; airport access problem; environmental impact of airports.

2. Text Book:

T1 Robert M. Horonjeff, Francis X Mckelvey, Willian J Sproule and Seth B Young, "Planning and Design of Airports" McGraw- Hill Professional Publishing, 6th Revision, 2011

Reference Books:

R1: Norman J Ashford, Saleh Mumeyiz and Paul H. Wright, "Airport Engineering: Planning, Design and Development of 21st Century Airports" John Wiley & Sons; 4th Edition, 2011

3. Course Plan:

Lecture No.	Topics to be covered	Learning Objectives	Reference
1	Introduction to air transportation	About air transportation as a part of Transportation engineering, and the Organization chart	Chapter-1
2-5	Characteristics of aircrafts	Importance of aircraft weight, runway performance, aircraft characteristics and the basic dimensions.	Chapter-2
6-7	Airport planning studies	System plan, master plan, land the and-use plan	Chapter-4
8-9	Forecasting for airport planning	Forecasting methods	Chapter-5
10-11	Airport capacity	Capacity, factors affecting capacity and delay	Chapter-7 R1
12-18	Runway	Layout plan, Runway orientation, Length of runway, runway system dimensions	Chapter-6
19-21	Taxiways and aprons	Widths and slopes, separation requirement, sight distance, exit taxiway geometry and	Chapter-6
22-28	Pavement design	Soil investigation and evaluation, FAA pavement design method, Design of flexible and rigid pavement, Joint and spacing, Continuously reinforced pavement, pavement evaluation and	Chapter-7
29-30	Airport drainage	Purpose, design storm for surface runoff, amount of runoff, layout of surface drainage.	Chapter-9
31-32	Passenger terminal functions	Terminal system, design considerations, planning process, apron gate system.	Chapter-10
33-34	Airport lighting	Requirements of visual aids, approach lighting, threshold lighting, runway and taxiway lighting.	Chapter-8
35-36	Air Traffic Control	Introduction to Air Traffic Management and Airport Traffic Control Tower.	Chapter-3
37-38	Air cargo facilities	Understand the design concepts for flow through terminals and to study the air cargo facilities-flow through cargo terminals	Chapter 10 and 11

39-40	Environmental impact of airports	Impact on the life of the people living nearby, the effect on the Fauna and Flora.	Chapter-14

4. Evaluation Scheme:

S. No.	Evaluation Component	Duration (min)	Weightage (%)	Date & Time	Remarks
1	Midsem Test	90	25	11/10 - 4.00 - 5.30PM	OB
2	Comprehensive Examination	180	35	13/12 AN	OB
3	Assignments		10	Continuous	OB
4	Projects and Presentations		20	To be Announced	OB
5	Quizzes	50	10	To be Announced	OB

5. **Chamber Consultation Hour:** Every Monday 04.00 PM – 05.00 PM, in addition to the consultation hour, you are free to meet the IC at any time.

6. **Notices:** Notices concerning this course will be displayed on CMS.

7. **Make-up Policy:** Prior permission for all make ups are a must. For medical emergencies, an email request has to be sent to the IC.

8. **Academic Honesty and Integrity Policy:** Academic honesty and integrity are to be maintained by all students throughout and no academic dishonesty is acceptable.

Instructor-In-Charge

CE G545