GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering- Transportation Engineering
Subject Code: 3721312
Semester – II
Subject Name: Airport System Planning and Design

Type of course: Program Elective - IV

Prerequisite: NIL

Rationale:

Air Transportation is also an important mode of transportation of goods and passengers. It is essential for civil engineer to understand the fundamentals of Airport Engineering. The course is helpful to determine the runway orientation, design of runway and airport facilities. It also includes the planning, geometric design, and construction of various facilities of the Airport. The course includes travel forecasting and freight demand. The impact of Airport on the environment is included in the study. It is essential to know the operational management of the various facilities of the Airport. The main objective is to provide basic understanding of various planning and operational component of Airport Systems

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Characteristics of Air Transportation, structure and organization, challenges and the issues, Airport master plan .	3
2	Characteristics of the aircraft, Airport requirements, site selection, layout plan and financial plan.	5
3	Forecasting air travel demand, Air freight demand.	5
4	Geometric design of runway, taxiway, aprons, Design of passenger terminal, analysis of flow through terminals.	10
5	Design of air cargo facilities, Airfield pavement and drainage design.	10
6	Environment impact of Airports.	5
7	Air traffic control lighting and signing.	2
8	Airport capacity and configuration, parking configurations and apron facilities.	5
	TOTAL	**45 Hr.**

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Suggested Specification table with Marks (Theory): (For ME only)

Distribution of marks weightage for cognitive level

Bloom's Taxonomy for Cognitive Domain	Marks Weightage (%)
Recall	10
Comprehension	10
Application	30
Analysis	20
Evaluate	20
Create	10

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Khanna S.K., Arora M.G., Jain S.S., Airport Planning & Design, Nemchand Bros., Roorkee
2. Horenjeff Robert, The planning & Design of Airports, McGraw Hill Book
3. De Neufille Richard and Odoni Amedeo, Airport Systems Planning and Design, McGraw Hill
4. Ashford Norman. J., Mumayiz Sakleh.A and Wright Paul.H., Airport Engineering Planning Design and Development of 21st Century Airports, John Wiley and sons
5. Wells, Alexander; Young, Seth, Airport Planning & Management, McGraw Hill

Course Outcomes: At the end of the course, Student will be able

Sr. No.	CO statement	Marks % weightage
CO-1	Develop the knowledge of Airport Engineering in the context of regional mass transportation systems	20%
CO-2	Design of Air transportation systems along with infrastructures required for Airports.	30%
CO-3	Estimate the environmental and other impacts impended due to Airport projects.	10%
CO-4	Design of runway, taxiway, aprons and cargo facilities with pavement design.	30%
CO-5	Design of parking configurations and apron facilities at Airport.	10%

List of Experiments:

1. Problems based on forecasting of passenger and freight traffic for airways.
2. Problems based on costing and pricing strategy in airways.
3. Planning and design of airway network, routes and schedules for the actual or hypothetical regional area development.

4. Planning and design of infrastructures required for air ports Road Unevenness Measurement by Bump-Integrator.
5. Problems for design of runways, taxiways, aprons, terminals etc. for Airports

Field Visit:

1. Visit to the Airport terminal building, structures of terminal area and management office