GUJARAT TECHNOLOGICAL UNIVERSITY
CIVIL (TRANSPORTATION ENGINEERING) (13)
AIR TRANSPORTATION SYSTEM PLANNING AND DESIGN
SUBJECT CODE: 2721312
M.E. 2nd SEMESTER

Type of course : Major Elective - II

Prerequisite : Nil

Rationale :

Air Transportation is also an important mode of transportation of goods and passengers. It is compulsory 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 study of environmental effect of Airport is covered in the study. It is compulsory to know the operational management of the various facilities of the Airport.

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)		
						ESE	OEP	PA	RP	
3	2#	2	5	70	30	20	10	10	10	150

Content:

Sr.No.	Topics	Teaching Hrs.	Module Weightage
1	Characteristics of Air Transportation, structure and organization, challenges and the issues, Airport Master Plan,	3	5%
2	Characteristics of the aircraft, Airport Requirements, site selection, layout plan and financial plan,	5	10%
3	Forecasting air travel demand, Air freight demand	5	10%
4	Geometric Design of runway, taxiway, aprons, Design of Passenger Terminal, analysis of flow through terminals,	10	25%
5	Design of air cargo facilities, Airfield pavement and drainage design,	10	25%
6	Environment impact of Airports.	5	10%
7	Air traffic control lighting and signing,	2	5%
8	Airport capacity and configuration, parking configurations and apron facilities	5	10%

References:

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 Co.

Course Outcomes:

1. To enhance the knowledge of Airport Engineering in the context of regional mass transportation systems.
2. To provide techniques of planning, modeling and designing the transportation systems along with infrastructures required for Airports.

3. To make the students aware of the environmental and other impacts impended due to Airport projects.

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

Open Ended Problems:

Field Visit:

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

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website