GUJARAT TECHNOLOGICAL UNIVERSITY

BE (CIVIL & INFRASTRUCTURE ENGINEERING)
AIRPORT AND SEAPORT INFRASTRUCTURE
SUBJECT CODE: 2184002
8th Semester

Type of course: Core Subject

Prerequisite: NIL

Course Objective: Students should be able:

1. To understand important planning concepts of airports and sea ports
2. To make the students familiar with important functional components of airports and seaports
3. To understand important design concepts of airports and sea ports

Teaching and Examination Scheme:

Teaching Scheme			**Credits**	**Examination Marks**				**Total Marks**
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA(M)	Viva	PA (I)	
3	2	0	5	70	30	30	20	150

Contents:

Sr. No	**Topics**	**Hrs.**	**% Weightage**
A	**AIRPORT ENGINEERING**		
1	**Introduction and Planning**: History, development, policy of air transport, air-transport authorities, air crafts and its characteristics, airport classifications, regional planning-concepts and advantages, location and planning of airport elements, estimation of future air traffic, development of new airport, requirements of an ideal airport layout.	**2**	**5**
2	**Run Way and Taxiway Design**: Wind rose and orientation of runway, factors affecting, geometrics elements, layout, exit taxiway, turn around facility. Aprons, aircraft parking configurations and parking systems ,hanger-site selection, planning and design considerations, Fuel storage area, blast pads, wind direction indicator	**5**	**12.5**

3	**Terminal Area Design**: Elements and requirements, terminal building functions, space requirements, location planning concepts, vehicular parking area and Circulation network. passenger requirements at terminal building	**3**	**7.5**
4	**Grading and Drainage**: Airport grading, importance, operations, airport drainage aims, functions, special characteristics, basic requirements, surface and subsurface drainage systems.	**2**	**5**
5	**Air Traffic Control and Visual Aids**: Air traffic control objectives, control system, control network-visual aids-landing information system, airport markings and lighting	**2**	**5**
B	**SEAPORT ENGINEERING**		
1	**Introduction to Seaport**: History and policy, classifications, major ports in India, Seaport components, ship characteristics	**2**	**5**
2	**Design of Seaport Structures**: Wind, waves, tides formation and currents phenomena, their generation characteristics and effects on marine structures general design aspects, breakwaters - function, types general design principles, wharves, quays, jetties, piers, pier heads, dolphin, fenders, mooring accessories	**9**	**22.5**
3	**Port Planning - Amenities & Operations:** characteristics of good seaport and principles of seaport planning, size of seaport, site selection criteria and layout of seaport, Dry ports, Bulk cargo, Transshipment ports, Port of call, Surveys to be carried out for seaport planning, Ferry, Transfer bridges, floating landing stages, transit sheds, warehouses, cold storage, aprons, cargo handling equipment, purpose and general description: stack area, single point mooring	**11**	**27.5**
4	**Navigational Aids:** Channel and entrance demarcation, buoys, beacons, light house electronic communication devices.	**2**	**5**
5	**Seaport Maintenance**: Costal protection-purpose and devices, dredging, dredgers-types and suitability	**2**	**5**
		40	

Course Learning Outcomes:

After learning the course the students should be able to:

1) To understand the various elements of Airport and Seaport

2) To understand the fundamentals of planning and design of various marine structures

3) To make the students aware about the operations in Seaport
4) To give knowledge of maintenance techniques at Seaport
5) To understand the fundamentals of planning and design of Airport structures.
6) To make students aware of design of runway and taxiways at Airport
7) To make students aware of the operations at Airports

Texts Books: NIL

Reference Books:

1. Dr. S. K. Khanna, M.G.Arora and S.S. Jain, Airport Planning & Design, Nem Chand & Bros.,Roorkee
2. G.V. Rao Airport Engineering, Tata McGraw Hill Pub. Co., New Delhi
3. R. Srinivasan and S. C. Rangwala, Harbour, Dock and Tunnel Engineering, 1995, Charotar Pub.House, Anand
4. S. P. Bindra, A Course in Docks and Harbour Engineering, 1992, DhanpatRai& Sons, NewDelhi
5. Airport Engineering, Charotar Publishing House Pvt. Ltd, Anand

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N	E Level	C
10	**15**	**20**	**20**	**25**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

List of Open Source Software/learning website: www.nptel.iitm.ac.in/courses/

Active learning Assignments (AL) : Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The Power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.