Kadi Sarva Vishwavidyalaya, Gandhinagar

M.E. (Civil Infrastructure Engineering) Semester: I

(w.e.f. Academic Year 2017-18)

Subject Name: Railway, Airport and Marine structures

Subject code: MECV-105-N-B

A. Course objective :

- To have an overall knowledge of the design and construction of airport, railway, docks, harbours and ports as a whole.
- To understand the function of different components of airports, railway, docks and harbours.

B. Teaching /Examination Scheme

Teaching Scheme				Credit Scheme			Evaluation Scheme				
Lect (Hrs)	Tu (Hrs)	Prac. (Hrs)	Total (Hrs)	Theory	Pra/TW	Total	UE	IE	CIA	Prac/Viva	Total
04	02	00	06	04	01	05	70	30	20	30	150

C. Detailed Syllabus

Module I : Docks And Harbor Engineering

1 General

History, Modern trends in water transportation, Historical development in India, Ports development in India, Port authorities ,Bodies and association

2 Harbor Planning and marine structures

Selection of site and planning of harbors, Ship characteristics, Natural Phenomenon affecting Harbor survey, General design aspects, Breakwaters - function, types general design principles, Wharves, Quays, Jetties, Piers, Dolphin, Fenders, Mooring Accessories

3 Navigation Aids and Coastal Protection

Necessity, Types of navigation aids, Requirement of signals, Fixed and floating navigation aid Port building facilities, design of Transit sheds, Warehouses, Cargo handling facility, Services for shipping terminals ,Inland port facilities planning, Sea wall, Revetment ,Bulkhead, Cathodic Protection

Module II : Air Port Engineering

Airport Planning, General

4 History ,National airport authority**,** Air craft's and its characteristics, Air port classifications, Airport Terminology

5 Geometric Design : Geometric Design of runway, taxiway, aprons, Design of Passenger Terminal, analysis of flow through terminals, Design of air cargo facilities, Design of airfield pavement and drainage design.

Module III : Railway Engineering

6 Rail Transportation System :

Importance of Railway for regional development, Railway Track system & sub-structures, Railway infrastructure, Modernization in track, safety in railways, under-ground railways.

7 Demand analysis and forecasting: For passenger and freight traffic costing and pricing principles, project analysis and design. Environmental and other impacts.

D. Lesson Planning

Sr. No.	Unit	Hours	Weightage
1.	Docks and Harbour, General	7	5
2.	Harbour Planning and marine structures	8	15
3.	Navigation Aids and Coastal Protection	5	10
4	Air Port Planning, General	6	10
5	Geometric Design	16	30
6.	Rail Transportation System	8	15
7	Demand analysis and forecasting	10	15
	Total	**60**	**100**

E. List of Tutorial

1 Docks and Harbour, General
2 Harbour Planning and marine structures
3 Navigation Aids and Coastal Protection
4 Air Port Planning, General
5 Geometric Design
6 Rail Transportation System
7 Demand analysis and forecasting

F. Instructional method and pedagogy **(Continuous Internal Assessment Scheme) (CIA)**

- At the start of course, the course delivery pattern, prerequisite of the subject will be Discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries marks.
- At regular intervals assignments will be given. Students should submit all assignments during given period.
- Classroom participation and involvement in solving the problems in Tutorial rooms Carries Marks
- Internal exam of 30 marks will be conducted as a part of Mid semester evaluation.
- Experiments shall be performed in the field related to course contents.
- The course includes a practical, where students have an opportunity to build an appreciation for the concept being taught in lectures.

G. Students Learning Outcomes:

- The students will gain an experience in the implementation and design of Railway,Docks, Harbour and Airport Engineering on engineering concepts which are applied in field of Water and Air Transportation Engineering.
- The students will get a diverse knowledge of Railway, Docks, Harbour and Airport engineering practices applied to real life problems.
- The students will learn to understand the theoretical and practical aspects of Railway, Docks, Harbour and Airport engineering along with the design and management applications.

H. Recommended Study Materials

Reference Books:

1. Alonzo Def. Quinn, Design and Construction of Ports and Marine Structure, McGraw - Hill Book Company, New York
2. Ashford N. and Wright P.H., Airport Engineering, John Wiley and Sons, Inc., New York
3. Horonjeff R and Mackelvey F.X., Planning and Design of Airports fourth Intl.edition,McGraw Hill Book Co., New Delhi
4. Dr. S. K. Khanna, M.G.Arora and S.S. Jain, Airport Planning & Design, Nem Chand & Bros., Roorkee
5. S. P. Bindra, A Course in Docks and Harbour Engineering, 1992, Dhanpat Rai & Sons, New Delhi
6. R. Srinivasan and S. C. Rangwala, Harbour, Dock and Tunnel Engineering, 1995, Charotar Pub House, Anand
7. G.V. Rao Airport Engineering, Tata McGraw Hill Pub. Co., New Delhi
8. Satish Chandra and M.M. Agrawal, Railway Engineering, Oxford University Press, New Delhi
9. S.C.Saxena And S.P. Arora, A Text Book of Railway Engineering, Dhanpat Rai Sons, New Delhi