Kadi Sarva Vishwavidyalaya's
LDRP Institute of Technology & Research
Gandhinagar-382 015

M.E. (Civil) (Infrastructure Engineering), Semester-II
Subject Name: Transportation Facility Design
Subject Name: MECV202

A. Learning objectives:

The objective of this course is

- To study of Highway design
- To develop concepts related Terminal functions, analysis of terminals, process flow charts of passenger & goods terminals
- To learn basic principles of design of intersections, signal coordination
- To learn concept of level of service for different transport system

B. Teaching scheme (credits and hours):

Teaching Scheme				Credit Scheme			Evaluation Scheme				
Lect Hrs	Tut Hrs	Pract. Hrs	Total	Theory	Pract/TW	Total	UE	IE	CIA	PRAC/VIVA	Total
04	02	00	06	04	01	05	70	30	20	30	150

C. Detailed syllabus :

1. **Introduction:**
   Design of highways, design of at-grade intersections, design of signalized intersection, design of grade separated intersection, terminal design, and design of facilities for non-motorized transport.
2. **Terminal Planning & Design:**
   Terminal functions, analysis of terminals, process flow charts of passenger & goods terminals, terminal processing time, waiting time, capacity & level of service concept, study of typical facilities of highway, transit, airport and waterway terminals, concept of inland port.
3. **Design of Highways:**
   Hierarchy of highway system, functions, design designations, concepts in horizontal & vertical alignment, integration, optical design, geometrical standards for mobility & accessibility components, landscaping and safety considerations, evaluation and design of existing geometrics
4. **Design of Intersections:**
   Review of design of at-grade intersections, signal coordination – graphic methods & computer techniques, grade separated intersections – warrants for selection, different types & geometric standards, spacing & space controls, ramps & gore area design.

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D. Lesson planning:

Unit No	Topics	Lectures (Hours)	Weightage
1	Introduction	15	25
2	Terminal Planning & Design	15	25
3	Design of Highways	15	25
4	Design of Intersections	15	25
	Total	**60**	**100**

E. List of Tutorials :

Sr. No.	Name of tutorial
1	Problems based on design of at-grade intersections, signalized intersection.
2	Problems based on design of grade separated intersections.
3	Problems based on design of facilities required for non-motorized transport and pedestrians.
4	Problems based on design of terminals for passenger and goods on highway, railway, airport and waterway port.
5	Problems based on design of horizontal and vertical alignment of highways with landscaping and safety aspects.

F. Instructional Method and Pedagogy (Continuous Internal Assessment (CIA) Scheme)

- 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.
- 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:

At the end of the course,

- The students will get the experience to design of Intersections & Signals.

- The student will get in depth knowledge of special aspect of facility &.problems arises at Bus, Railway, Airport terminals.
- To learn various aspects of Docks & Harbours.
- To students can analyses present & future facility of Transportation Facility Design.

H. Recommended Study Materials

Reference Books:

1. Kadiyali, L.R., Traffic Engineering and Transport Planning, Khanna publishers.
2. IRC-SP41: Guidelines for the Design of At-Grade Intersections in Rural & Urban Areas
3. Salter, R J., Highway Traffic Analysis and Design, ELBS.
4. Edward K. Morlock, Introduction to Transportation Engineering & Planning, International Student Edition, Mc-Graw Hill Book Company, New York.

. Khanna S.K., Arora M.G., Jain S.S., Airport Planning & Design, Nemchand Bros., Roorkee
6. Horenjeff Robert, The planning & Design of Airports, McGraw Hill Book Co.
7. Saxena S.C., Railway Engineering, Dhanpat Rai & Sons, 1995.
8. Vukan R. Vuchic, Urban Transit : Operations, Planning and Economics, Wiley Sons Publishers.
9. Bindra S.P., Docks & Harbour Engineering, Dhanpat Rai Publications,
10.Srinivasan R., Harbours, Docks & Tunnel Engineering, Charotar Publishing House, Anand, 1999.