

B.E. Semester: VIII
Department of Civil Engineering

Subject Name: Traffic Engineering and Management (CV804-N-B)

Course Category: Program Course Elective– V (PCE)

A. Objectives of the Course:

- To have an overall knowledge of the traffic components and assess the traffic characteristics and related problems.
- To develop a strong knowledge base of traffic planning and its management in any transportation area.
- To provide knowledge of traffic control devices and its techniques in transportation interaction.

B. Teaching & Evaluation Scheme:

| Teaching Scheme | | | | Credit | Evaluation Scheme | | | | | Total Marks |
|-----------------|-------|-------|-----------|--------|-------------------|-------|-------|-------|----------|-------------|
| L hrs | T hrs | P hrs | Total Hrs | | Theory | | IE | CIA | Pra/Viva | |
| | | | | | Hrs | Marks | Marks | Marks | Marks | |
| 3 | 0 | 0 | 3 | 3 | 70 | 30 | 20 | 00 | 120 | |

C. Detailed Syllabus:

Module I: (Traffic Engineering)

1. Fundamental of traffic flow:

Basic Components of Traffic Flow, Road User, Vehicle, Environment and their Characteristics, Speed – Volume – Density Relationship, Homogenous and Heterogenous Traffic Flow, PCU Concept, Vehicle Operating Cost

2. Transportation surveys:

O-Surveys, Spot-Speed Survey (using Enoscope and Radar Speedometer), Traffic Volume Counts, Travel Time, Parking Survey, Interaction Volume Count and Delay Surveys, Methods of Analysis and Interpretation

3. Accident studies:

Records, Analysis, Safety Measures, Road Safety Audit

4. Introduction of computer software:

TRIPS, TRANS-CAD, HCM, VISSIM and MXROADS

Module II: (Traffic Engineering)

5. Highway capacity analysis:

Level of service concept, HCM Methods, IRC recommendations

6. Regulations:

Engineering, Enforcement, Education, Environment Measures

7. Traffic control devices:

Signs, Markings, Islands, Channelization, One-Way Streets, Speed Breakers, Bus-Stop Locations and Bus - Ways, Segregations, Tidal Flow Arrangements, Area Traffic Control, Parking, and PedestrianFlow Control

8. Management techniques:

Traffic Regulations, Driver, Vehicle, Flow and General Controls Traffic Devices Control, Types of Parking Design Principles, Parking Restrictions, One-Way Streets, Zebra Crossing, Railings, Pedestrian Signal Foot Over Bridges, Traffic Management Authorities, Road Lighting

D. Lesson Planning:

| Unit No | Title of the Unit | Minimum Hours | Weightage (%) |
|----------------|-----------------------------|----------------------|----------------------|
| 1. | Fundamental of traffic flow | 10 | 25 |

| | | | |
|--------|-----------------------------------|----|-----|
| 2. | Transportation surveys | 06 | 10 |
| 3. | Accident studies | 03 | 05 |
| 4. | Introduction of computer software | 03 | 10 |
| 5. | Highway capacity analysis | 06 | 10 |
| 6. | Regulations | 03 | 05 |
| 7. | Traffic control devices | 06 | 20 |
| 8 | Management techniques | 08 | 15 |
| Total: | | 45 | 100 |

E. Assignments:

- Minimum 5 Theoretical Questions and examples from each topic

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, practical and Tutorial which carries 05 Marks.
- At regular intervals assignments is given. In all, a student should submit all assignments of 05 marks each.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries 05 Marks.
- Viva Voce will be conducted at the end of the semester of 05 Marks.
- One internal exam of 30 marks is conducted as a part of Mid Semester evaluation.

G. Students Learning Outcomes:

On the successful completion of this course

- The students will gain knowledge in the fundamentals components of traffic engineering and its features

- The students will get a vast understanding on various traffic enforcements rules and regulations
- The students will get aware of the different software used in the field of transportation and its utility in solving the traffic problems

H. Recommended Study Materials:

a. Text book & Reference Books:

1. Kadiyali, L.R., Traffic Engineering & Transport Planning, Khanna Publishers, New Delhi
2. JotinKhisty, S.C. and Kent Lall, B., Transportation Engineering – An Introduction, Prentice-Hall, NJ Concrete Repair, A practical Guide, Michael G. Grantham, Spoon Press
3. S.C. Saxena Traffic Planning And Design .DhanpatRai Pub, NewDelhi
4. Hutchison, B.G., Introduction to Transportation Engineering, & Planning, McGraw Hill Book Co.
5. John W. Dickey, Metropolitan Transportation Planning, Tata McGraw Hill Pub. Co.
6. Vukan R. Vuchic, Urban Public Transportation System & Technology, Prentice Hall, Inc.
7. Papacostas, C.S., Fundamentals of Transportation System Analysis, PHI
8. JotinKhisty, C. and Kent Lall, B., Transportation Engineering – An Introduction, Prentice-Hall, NJ

b. Web Materials:

1. <https://www.hindawi.com/journals/misy/2016/7968108/>
2. https://www.researchgate.net/publication/272370446_Analysis_of_Traffic_Flow_Speed-Density_Relation_Model_Characteristics
3. https://en.wikipedia.org/wiki/Traffic_flow
4. <https://www.intechopen.com/books/advanced-technologies/concentration-of-heterogeneous-road-traffic>
5. https://www.civil.iitb.ac.in/tvm/nptel/582_Accident/web/web.html
6. https://en.wikipedia.org/wiki/National_Traffic_and_Motor_Vehicle_Safety_Act
7. Software/learning website: www.nptel.ac.in

c. Indian Codes of Practice:

1. IRC: 35, Code of Practice for Road Signs

2. IRC: SP-12, Tentative Recommendations on the Provision of Parking Spaces for Urban Areas Resident
3. IRC: 67, Code of Practice for Road Markings
4. IRC: SP-43, Guidelines on Low-Cost Traffic Management Techniques for Urban Areas
5. IRC: 70, Guidelines on Regulation and Control of Mixed Traffic in Urban Areas
6. IRC: 53, Road Accident Forms A-1 and 4

