(ELECTIVE – C/I)
4/4 B.Tech. SEVENTH SEMESTER

CE7T5C **TRAFFIC ENGINEERING** **Credits: 3**

Lecture: 3 periods/week **Internal assessment: 30 marks**
Tutorial: 1 period /week **Semester end examination: 70 marks**

Objectives:

- To study in detail about transportation planning and systems.
- To know about the fundamentals of the traffic flow, transport survey , trip generation, distribution methods and various techniques of evaluation of transport projects
- To design the transportation facility

Learning outcomes:

At the end of course the student will be able to:

- Assess, evaluate and justify methods of traffic management and control.
- Understand the use of advanced simulation methods for the analysis of traffic systems and software tools for the design of traffic control strategies.
- Evaluate traffic impacts on the environment and safety.
- Calculate and apply methods for reducing traffic impacts on communities such as traffic calming strategies, accident reductions and parking management.

UNIT-I
TRAFFIC CHARACTERISTICS:
Basic characteristics of Traffic- Volume, Speed and Density- Relationship among Traffic parameters.

UNIT-II
TRAFFIC MEASUREMENT:
Traffic Volume Studies-Objectives- Types of Volume Studies –Concept of PCU- Data Collection and Presentation – Speed Studies – Types of Speeds- Objectives of Speed Studies- Methods of Conducting speed studies- Data collection and Presentation- Statistical Methods for Analysis of Speed Data.

UNIT-III
HIGHWAY CAPACITY:
Definition of Capacity – Importance of capacity – Factors affecting Capacity- Concept of Level of Service- Different Levels of Service- Concept of Service Volume- Peak Hour Factor.

UNIT-IV
PARKING STUDIES:
Types of parking facilities – On street and Off Street Parking Facilities- Parking Studies- Parking Inventory Study – Parking Survey by Patrolling Method- Analysis of Parking Data and parking characteristics-Multi Story Car Parking Facility-Design standards.

UNIT-V
TRAFFIC CONTROL & REGULATION:

Traffic Problems in Urban areas- Importance of Traffic Control and regulation- Traffic Regulatory Measures- Channelisation- Traffic Signals- Saturation Flow - Signal Design by Webster Method – Signal Phasing and Timing Diagrams.

UNIT-VI
TRAFFIC & ENVIRONMENT:
Detrimental effect of traffic on environment – Air Pollution – Pollutants due to Traffic – Measures to reduce Air Pollution due to Traffic- Noise Pollution – Measures to reduce Noise Pollution.

UNIT-VII
TRAFFIC SIGNS AND ROAD MARKINGS:
Types of Traffic Signs- cautionary, Regulatory and Informative Signs- Specifications- Pavement markings- Types of Markings – Lane markings and Object markings- Standards and Specifications for Road Markings.

UNIT-VIII
HIGHWAY SAFETY:
Problem of Highway Safety – Types of Road accidents- Causes – Engineering Measures to reduce Accidents- Enforcement Measures – Educational Measures- Road Safety Audit- Principles of Road Safety Audit.

Learning resources

Text books:

1. Traffic Engineering and Transportation planning, (2nd edition) by Kadiyali, L.K., Khanna publishers, 1983.
2. Highway Engineering and Traffic Analysis, (3rd edition) by Mannering and Kilareski, John wiley Publications, 2007.

Reference books:

1. Transportation Engineering by Khisty, C. J., Prentice Hall 1986.
2. Principles of Transportation Engineering by Partha Chakroborthy, Animesh Das. Prentice Hall, India, 2004.
3. Fundamentals of Transportation Engineering by Papacostas, C.S., Prentice Hall, India, 1987.