

01TR1102: Traffic Engineering

Objective of the Course: Objectives of introducing this subject at first year level in Masters of civil engineering are: The subject covers the study of urban goods movement with case studies.

- To understand the Traffic parameters
- To impart knowledge to the civil engineering students on road safety
- To make students understand about concepts of analysis and design of Traffic signal and intersection
- To make students able to perform various traffic data collection procedure

Credit Earned: 4

Students learning outcomes:

After successful completion of the course it is expected that student will be able to.

- Understand and analyses the properties of the traffic parameters.
- To analyze the highway capacity and level of service.
- Understand working and importance of different traffic control devices.
- To provide detailed knowledge of traffic flow characteristics, measurement techniques and analysis.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
3	0	2	4	50	30	20	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	Introduction	
	Basic components of traffic and their characteristics, Fundamental variables of traffic and their interrelationship, headway measurement techniques and Analysis.	5
2	Highway Capacity	
	Level of Service Measurement Techniques, HCM Methods, Design hourly volumes and speed, its uses	5

3	Volume, Speed & Delay Studies	
	Introduction, Types of speed & volume , Relation between various speed	5
	Methods for Measurement of different types of speed & volume, Delay studies	5
4	Parking	
	Definition, Parking Problem & ill effect of parking, Zoning & Parking space requirement standards	3
	Types of parking, On street & off street, Requirements of Parking Survey	3
5	Traffic Regulations	
	Introduction to Traffic Control Devices	3
	Traffic Signs - Importance, Principles of Traffic Signing & Types of signs	4
	Road Marking - Functions, Types of Road Marking	2
	Traffic Signals - Introduction, Advantage & Disadvantage, Warrants for signal, Design of fixed Signal, Design of Coordinated signal	2
	Intersection Types & Intersection Design	1
6	Traffic Management	
	Introduction, Travel Demand Management, Traffic Management Techniques	6

Suggested lists of experiments

1. Classified traffic volume study with use of hand count, tape, video recorder
2. Spot speeds study with radar meter, Enoscope
3. Travel time and delay study at Signalized intersection.
4. Parking survey
5. Road accident studies
6. Pedestrian flow survey
7. Intersection volume study
8. Analysis of traffic survey data, presentation and interpretations
9. Traffic speed-flow-density relationship by field observations and finding Capacity & Level of service of highway section.
10. Saturation flow measurement at Signalized Intersection.
11. Design of signal for Isolated Intersection.
12. Design of co-coordinated signals.
13. Design of on Street Parking / Parking plot

Suggested Theory Distribution

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	15%	20%	25%	20%	10%

Instructional Method and Pedagogy:

1. Use of Learning Management system like canvas
2. Demonstration through ppt and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

Recommended Study Material:**Reference Book:**

1. L.J.Pingnataro, Traffic Engineering; Theory and Practice. Prentice Hall, Englewood Cliffs,1973.
2. M.Wohl and B.V.Martin, Traffic System Analysis for Engineering and Planners, McGraw-Hill. NewYork,1983.
3. D.R.Drew, Traffic Flow Theory and Control, McGraw Hill. New York1968
4. W.R.McShane, R.P.Roess and E.S.Prassas, Traffic Engineering, Prentice Hall, New Jersey,1990.
5. R.J.Salter, Highway Traffic Analysis and Design, McMillan, Hampshire,1989.
6. Highway Capacity Manual, Transportation Research Board, Washington D.C., 1997,2000
7. ParthoChakraborty and Animesh Das, Principles of Transportation Engineering, PHI
8. S.C. Saxena, Traffic Planning and Design, DhanpatRai Pub., New Delhi