

**IV Year II Semester**  
**Code: 17CE831**

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**TRAFFIC ENGINEERING**  
**(Dept.Elective-III)**

**Course Learning Objectives**

The objectives of this course are:

1. To know various components and characteristics of traffic.
2. To know various traffic control devices and principles of highway safety.
3. To understand the detrimental effects of traffic on environment
4. To know highway capacity and level of service concepts.
5. To learn about intelligent vehicle highway systems.

**Course Outcomes**

At the end of course, Student can able to

1. Determine traffic speed, volume, travel time and density.
2. Understands Traffic Characteristics
3. Design traffic signals
4. Gain knowledge related to Environmental considerations
5. Determine highway capacity
6. Gain knowledge of traffic surveillance and monitoring and IVHS programs

**SYLLABUS**

**UNIT- I**

**Components Of The Traffic System:** Human-Vehicle–Environment System; characteristics of Road users & Vehicles, Highways & their classification, Traffic Studies: Inventories, Volume studies; Speed, Travel time and Delay studies, Intersection studies, Pedestrian studies; Parking studies; Accident studies.

**UNIT- II**

**Traffic Characteristics:** Microscopic and macroscopic flow characteristics: Time headways; Temporal, spatial and model flow patterns; Interrupted and Uninterrupted traffic. Microscopic and macroscopic speed characteristics: Vehicular speed Trajectories; Speed characteristics – Mathematical distribution; Speed and travel time variations; Microscopic and Macroscopic density

characteristics: Distance headway characteristics; Car-following theories; Density measurement techniques; Density contour maps

**UNIT- III**

**Traffic Control Devices & Highway Safety:** Traffic signs & Markings; Signal Warrants; Signal phasing and Development of phase plans; Fixed and Vehicle activated signals; Webster method; ARRB method; Drew’s Method; IRC method; Signal coordination; Area Traffic control.

Accident characteristics – Road – Driver – Vehicle; Accident recording and Analysis; Highway Safety Improvement Program; Safety Audit.

**UNIT-IV**

**Environmental Considerations:** Air pollution: Kinds of pollutants; Air pollution standards; Measures of air quality; modeling and control. Noise pollution: Measurement of sound levels; Acceptable limits, Prediction of noise levels, Traffic noise control.

**UNIT- V**

**Highway Capacity And Level Of Service:** Capacity and level of service; Factors affecting Capacity and LOS; Capacity of Rural Highways, Capacity of Urban Roads; HCM and IRC standards.

**UNIT- VI**

**Intelligent Vehicle – Highway Systems:** Traffic surveillance and monitoring; IVHS programs, Role of IVHS, IVHS categories, Benefits and Costs of IVHS

**Text Books:**

1. Traffic Engineering: Theory and Practice, Pignataro LJ., Prentice hall, Inc.
2. Traffic and Transport planning, Kadiyali L.R., Khanna Publishers.

**References:**

1. Traffic Engineering Hand Book, Institute of Transportation Engineers, 4 Ed., Prentice Hall
2. Traffic Engineering, Mc Shane, WR and RP Roess, Prentice Hall
3. Highway Traffic analysis and design, Salter RJ and NB Hounsell, 3rd ed., Macmillan
4. Traffic Planning and Engineering, Hobbs FD., Pergamon press
5. Traffic flow fundamentals, May, A.D., Prentice Hall

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	3	3	-	2	-	-	-	-	2	-	-	-	-	-	<b>3</b>
<b>CO2</b>	3	3	-	2	-	-	-	-	2	-	-	2	-	-	<b>0</b>
<b>CO3</b>	3	2	3	2	-	-	-	-	-	-	-	2	-	-	<b>0</b>
<b>CO4</b>	3	2	-	2	-	2	3	-	-	-	-	2	-	-	<b>0</b>
<b>CO5</b>	3	2	-	2	-	-	-	-	-	-	-	2	-	-	<b>0</b>
<b>CO6</b>	3	2	-	2	1	2	2	2	-	1	1	2	3	3	2