Semester-2

1: Traffic Engineering – 2

Course Objectives:

1. To provide detailed knowledge of traffic flow characteristics, measurement techniques and analysis.
2. To train the students, how to find the highway capacity and level of service.
3. To make aware of traffic management techniques and impacts of traffic.
4. To impart the concepts of design of traffic control devices and traffic infrastructures.

Course Contents:

1. Basic Traffic Flow Characteristic, Speed-Flow, Speed-Density, Flow-Density Curves and relations.
2. Highway Capacity, Level of Service – Measurement Techniques.
3. Speed-Flow on Grades, HCM Methods. Design hourly volumes and speed; Highway capacity and performance characteristics
4. Merging – Diverging Flow, Weaving Flow, Length Calculations.
5. Traffic Control Devices, Rules, Signs, and Signals – Signal Cycle Time Calculations, Isolated and Co-Ordinated Signals.
6. Traffic Management: TSM Techniques.
7. Environmental Impact of Traffic – Air, Noise Pollution.
8. Principles of branching network systems for flexibility, Travel forecasting principles and techniques; Design of Parking;
9. Simulation in traffic engineering design.

Practical work:

List of tests/ practical are given below.

Sr. No.	Test/ Practical/Tutorials
1	Traffic speed-flow-density relationship by field observations and finding Capacity & Level of service of highway section.
2	Stopped delay & Travel time delay Study on Signalised Intersection.
3	Saturation flow measurement at Signalised Intersection.
4	Design of signal for Isolated Intersection.
5	Design of co-coordinated signals.
6	Design of summit vertical curve, Climbing lane & 'No overtaking zone' marking. Weaving length calculations.
7	Design of on Street Parking / Parking plot.
8	Tutorials on Travel forecasting techniques.

Field work: Identification of problematic spots for traffic flow and suggesting suitable remedial measures. Its presentation with group discussion.

Field visit: A visit to Full cloverleaf junction or any other important traffic infrastructure.

References:

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2. M.Wohl and B.V.Martin, *Traffic System Analysis for Engineering and Planners*, McGraw-Hill. New York,1983.
3. D.R.Drew, *Traffic Flow Theory and Control*, McGraw Hill. New York 1968.
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. James H. Banks, *Introduction to Transportation Engineering,* WCB-McGraw Hill, New York
8. S.C. Saxena, *Traffic Planning and Design,* Dhanpat Rai Pub., New Delhi.
9. Partho Chakraborty and Animesh Das, *Principles of Transportation Engineering*, PHI
10 Kadiyali L.R., *Traffic Engineering and Transport Planning*, Khanna Publishers.
11 Khanna S.K., Justo C.E.G., *Highway Engineering*, Nem Chand & Bros., Roorkee.
12 F. L. Mannering, W. P. Kilareski and S. S. Washburn, *Principles of Highway Engineering and Traffic Analysis.* Wiley India Pvt. Ltd., New Delhi.