4 : TRAFFIC FLOW THEORY AND MANGEMENT

Course Objectives :

To study the movement of vehicles in a network mathematically and possible management measures for operating the highway facility efficiently.

Course Content :

Introduction, Components of Traffic Flow System, 3-Component System, Modern Concept in System Identification, Driver Behaviour Modelling, Simulation, The controlled Access Concept, Freeway Concept, System Performances, Measures of Effectiveness. Mathematical Modelling, Probabilistic and Stochastic Models of Traffic Flow Process, Discrete and Continuous Modelling Headways, Gaps and Process of Gap acceptance, Macroscopic Models, Car-Following Model, Queueing Models, Fundamental and Developments of Queuing Processes, Applications, Fundamental of Traffic Management, Principles and Methodology, Traffic Systems Management, Techniques of Management, Exclusive Bus Lanes Traffic Management Techniques, Speed Control and Zoning, Parking Control, Traffic Segregation and Channelization, Principles and Design of Traffic Signs, Their Placement and Visibility. Transportation System Management, Route and Network Management, Area Traffic Management, City Wide Traffic Control and Management, Centralized Data Processing and Monitoring.

Pre-requisite : Nil

Reference Books :

1. Drew D.R., “Traffic Flow Theory and Control”, Mc Graw Hill Book Company, New York, 1968
2. May A.D. “Traffic Flow Fundamentals”, Prentice Hall, Englewood Cliffs, New Jersey, 1990
3. Garber N.J., Hoel L.A., “Traffic and Highway Engineering”, West Publishing Company, New York, 1988
4. Khisty C. J. “Transportation Engineering – An Introduction”, Prentice Hall, Englewood Cliffs, New Jersey, 1990.

Practical:

1. Traffic flow characteristics
2. Analysis of speed, flow and density relationships
3. General and linear speed- density relationship
4. Problems on bottleneck and shockwaves
5. TSM objective and process layout
6. Air Qqqquality impact
7. Transportation demand management and ITS
8. Traffic segregation and bikeways
9. Parking studies and management
10. Semester problem