URBAN TRANSPORT PLANNING
(Professional Elective-IV)

Course Code: 20CE1162 **L T P C**
3 0 0 3

Pre-requisites: Transportation Engineering, Traffic Engineering

Course Outcomes:
At the end of the course, the student will be able to:
CO1: Outline travel demand models
CO2: Explain different data collection methods and sampling
CO3: Generate trip generation and distribution models
CO4: Generate trip assignment and modal split
CO5: Assess interaction between traffic-environment & economic evaluation of transportationplans

UNIT-I **(10 Lectures)**

CONCEPT OF TRAVEL DEMAND:

Travel characteristics – Origin. Destination, Route mode, Purpose – Travel demand as a functionof independent variables – Assumptions in demand estimation, relation between land use and travel – Four step process of Transportation planning.

TRANSPORTATION PLANNING PROCESS:

General concept of Trip – Trip Generation – Trip Distribution –Traffic assignment and modesplit, Aggregate and disaggregate Models– Direct Demand Models, Sequential and Sequential Recursive models.

Learning outcomes:
1. Explain the factors affecting travel demand (L2)
2. Describe Steps followed in transportation planning (L2)
3. Distinguish various types of demand models (L2)

UNIT-II **(10 Lectures)**

DATA COLLECTION AND INVENTORIES:

Definition of study area – Zoning principles; Types and sources of Data, Home Interview surveys; Roadside interview surveys; Goods, Taxi, IPT surveys; Sampling techniques; Expansion factors and Accuracy check: Desire line diagram and use.

Learning outcomes:
1. Explain the different methods and sources of data collection (L2)
2. Describe fundamental concepts: principles of zoning, desire line diagram etc. (L2)
3. Examine various sampling techniques and their applicability (L4)

UNIT-III **(10 Lectures)**

TRIP GENERATION MODELS:

Factors governing Trip Generation and Attraction: Multiple linear Regression Models –Category analysis.

TRIP DISTRIBUTION MODELS METHODS OF TRIP DISTRIBUTION:

Growth Factor Models – Uniform Growth Factor Method; Average Growth Factor Method; Fratar Method ; Furness Method ; limitation of Growth Factor Models ; Concept of Gravity Model.

Learning outcomes:

1. Describe various types of trip generation models and assumptions behind them (L2)
2. Analyze various types of trip distribution models and assumptions behind them (L3)
3. Interpret various limitations of above models (L3)

UNIT-IV **(10 Lectures)**

TRAFFIC ASSIGNMENT AND MODE SPLIT:

Purpose of assignment and general principles - Assignment Techniques – All-or-nothing assignment: Multiple route assignment: Capacity resistant method, Minimum path trees; Diversion curves. Factors affecting mode split – Probit, logit and Discriminant Analysis, dynamic assignment.

Learning outcomes:

1. Discuss about assignment models and assumptions behind their development (L2)
2. Evaluate factors affecting mode split (L2)
3. Discuss applicability of various models (L2)

UNIT-V **(10 Lectures)**

TRANSPORTATION AND ENVIRONMENT:

Detrimental effect of Traffic on Environment: Noise Pollution: Air pollution: Vibrations: Visual Intrusion – Effects and remedial measures.

ECONOMIC EVALUATION OF TRANSPORTATION PLANS:

Costs and benefits of transportation projects; vehicle operating cost; time saving, accident costs;methods of economic evaluation – benefit Cost ratio method – Net Present Value method
;Internal Rate of Return method.

Learning outcomes:

1. Discuss the impact of traffic on nature in terms of noise, air pollution (L2)
2. Explain the role of planner in implementing remedial measures (L2)
3. Analyze financial processes and techniques involved in quantifying costs of transportationprojects(L4)

TEXT BOOKS:

1. Kadiyali, L. R., "*Traffic engineering and transport planning"*. Khanna publishers, 2013.
2. Papa Costas C.S., "Fundamentals of Transportation Engineering", 2nd Edition, PrenticeHall of India, 2006.

REFERENCES:

1. Bruton M.J., “Introduction to Transportation Planning”, Hutchinson of London, 4th Edition, 2009.

2. Khisty C.J., “Transportation Engineering- An Introduction”, 3rd Edition, Prentice Hall, 2008.