

# Urban transportation planning - Web course

## COURSE OUTLINE

This course introduces four stages of urban transportation planning i.e., trip generation, trip distribution, mode choice modeling and route assignment.

The course will give exposure to land-use transport models. After going through the course students shall be able to undertake a complete transportation planning exercise for a city.

## COURSE DETAIL

Sl.No.	Topic	No. of Hours
1.	<b>Introduction:</b> <ul style="list-style-type: none"> <li>• Transport and Socioeconomic Activities;</li> <li>• Historical Development of Transport;</li> <li>• Transportation in the Cities;</li> <li>• Freight Transportation;</li> <li>• Future Developments.</li> </ul>	3
2.	<b>Urban Transportation System Planning - Conceptual Aspects:</b> <ul style="list-style-type: none"> <li>• Transport Planning Process, Problem Definition, Solution Generation, Solution Analysis, Evaluation and Choice, Implementation,</li> <li>• Sequence of Activities Involved in</li> </ul>	4



NP-TEL

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## Civil Engineering

### Pre-requisites:

1. Transportation Engineering I.

### Additional Reading:

1. IUT Journal.
2. IRC publications.
3. CTTS for Different Indian Cities.
4. Tool Kits by Ministry of Urban Development, Govt. of India.

### Coordinators:

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	Transport Analysis.		
3.	<b>Trip Generation Analysis:</b> <ul style="list-style-type: none"> <li>• Trip Production Analysis; Category Analysis; Trip Attraction Modelling.</li> </ul>	5	
4.	<b>Mode Choice Modelling:</b> <ul style="list-style-type: none"> <li>• Influencing Factors,</li> <li>• Earlier Modal Split Models, Trip-End Type Modal Split Model,</li> <li>• Trip-Interchange Modal Split Model,</li> <li>• Disaggregate Mode-Choice Model,</li> <li>• Logit Model of Mode-Choice,</li> <li>• Binary Choice Situations,</li> <li>• Multinomial Logit Model, Model Calibration,</li> <li>• Case Studies.</li> </ul>	5	
5.	<b>Trip Distribution Analysis:</b> <ul style="list-style-type: none"> <li>• Presentation of Trip-Distribution Data,</li> <li>• PA Matrix to OD Matrix,</li> <li>• Basis of Trip Distribution,</li> <li>• Gravity Model of Trip Distribution, Calibration of Gravity Model,</li> <li>• Singly and Doubly Constrained, Gravity Models,</li> <li>• Case Studies.</li> <li>• Growth Factor Methods of Trip Distribution,</li> <li>• Uniform Factor Method,</li> <li>• Average Factor Method,</li> <li>• Fratar Growth-Factor Method,</li> <li>• Disadvantage of Growth Factor</li> </ul>	5	

	Methods.		
6.	<b>Route Assignment:</b> <ul style="list-style-type: none"> <li>• Description of Transport Network,</li> <li>• Route Choice Behaviour,</li> <li>• The Minimum Path, Minimum Path Algorithm,</li> <li>• Route Assignment Techniques,</li> <li>• All-or-Nothing Assignment,</li> <li>• Multipath Traffic Assignment,</li> <li>• Capacity-Restrained Traffic Assignment.</li> </ul>	5	
7.	<b>Transportation Survey:</b> <ul style="list-style-type: none"> <li>• Definition of Study Area Zoning</li> <li>• Types of Movements</li> <li>• Types of Surveys, Home-Interview Survey,</li> <li>• Commercial Vehicle Survey,</li> <li>• Intermediate Public Transport Survey,</li> <li>• Cordon-Line Survey, Post-Card Questionnaire Survey,</li> <li>• Registration-Number Survey,</li> <li>• Tag-on-Vehicle Survey.</li> </ul>	4	
8.	<b>Transport Related Land-use Models:</b> <ul style="list-style-type: none"> <li>• Development of Land-use Models,</li> <li>• The Lowry Model, Application of Lowry Model.</li> </ul>	3	
9.	<b>Urban Structure:</b> <ul style="list-style-type: none"> <li>• Urban Activity Systems,</li> <li>• Urban Movement Hierarchies,</li> </ul>		

	<ul style="list-style-type: none"> <li>• Types of Urban Structure, Centripetal - Type Urban Structure,</li> <li>• Grid-Type Urban Structure, Linear-Type Urban Structure,</li> <li>• Directional Grid Urban Structure.</li> </ul>	3
10.	<b>Urban Goods Movement:</b> <ul style="list-style-type: none"> <li>• Classification of Urban Goods Movements.</li> <li>• Methodology of Approach to Analysis of Goods Movement.</li> <li>• Modelling Demand for Urban Goods Transport.</li> </ul>	3

**References:**

1. Ortuzar, J.D.D. and Willumsen, L.G. "Modelling Transport", John Wiley & Sons, 1990.
2. Ben Akiva, M.E. and Lerman, S.R., "Discrete Choice Analysis : Theory and Application to Travel Demand", The MIT Press, Cambridge, Massachusetts, 1985.
3. Hutchinson, B.G., "Principles of Urban Transport Systems Planning", McGraw Hill Book Company, 1974.
4. Kadiyali, L.R., "Traffic Engineering and Transport Planning" Khanna Publishers, New Delhi, 2006.