

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**CIVIL (TRANSPORTATION ENGINEERING) (13)**  
REGIONAL AND MASS TRANSPORTATION SYSTEMS PLANNING  
**SUBJECT CODE: 2721303**  
M.E. 2<sup>nd</sup> SEMESTER

**Type of course :** Major Elective - II

**Prerequisite :** Nil

**Rationale :**

Mass transportation planning is carried out primarily by Local, State and Central Government. The knowledge can be useful to planners and decision makers in the development and implementation of transportation system. It is important to understand the transportation and planning options. In the course, various models are covered to study urban mass transportation planning. It also includes the study of various phases of planning at regional level. It is compulsory to understand the various issues related to mass transportation planning at regional level. Various models of demand assessment are discussed in the course.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2 <sup>#</sup>	2	5	70	30	20	10	10	10	150

**Content:**

Sr.No.	Topics	Teaching Hrs.	Module Weightage
1	Demographic and Employment Forecasting Models: Demographic models -linear, exponential and logistic models; cohort survival models - birth, aging and migration models; employment forecasting models - economic base mechanism; input and output models - dynamic models of population and employment, multiregional extensions.	12	30%
2	Transport Modelling: Need & role of transport models, issues, transport models in practice, simplified transport demand models.	10	20%
3	Regional Transportation Development - Delineation of Planning Regions: Concept of region and space – types of regions, rural road network development approach, regional freight transportation- issues & approach, demand assessment, various models.	10	20%
4	Urban Mass Transit Planning & Modelling: Transit classification, transit network design, classification of routes, prediction of transit usage, evaluation of network, scheduling principles & methodology, urban freight transportation: freight demand, spatial distribution of goods, truck terminal planning.	13	30%

**References:**

- Hutchinson, B.G., Principles of Urban Transportation System Planning, Mc-Graw Hill 1974.
- Oppenheim, N., Applied Models in Urban and Regional Analysis, Prentice-Hall, NJ.
- Khisty C J., Lall B.Kent, Transportation Engineering – An Introduction, Prentice-

- Hall, NJ, 2005
4. Chand Mahesh, Puri U. K., Regional in India, Allied Publishers, New Delhi, 1983.
  5. Glassion John, Introduction to regional planning, Hutchinson and MIT Press, Cambridge, 1996.
  6. Ortuzar J. D., Willumsen L.G., Modeling Transport, John Wiley & Sons, 1994
  7. Vukan R. Vuchic, Urban Transit : Operations, Planning and Economics, Wiley SonsPublishers.

**Course Outcomes:**

1. To enhance the idea of transportation planning at the regional level.
2. To impart the techniques of developing models for the regional transportation planning.
3. To make the students conversant with Urban Mass Transit Planning and Freight Transportation Planning procedure.

**Field visit:**

1. Visit to the urban mass transit system depot, terminal and management office.
2. Visit to the truck terminal area.
3. Review the existing urban mass transit system and freight transportation system.
4. The suggestions for the improvements should be presented with group discussion.

**Tutorials:**

1. Problems based on population and employment forecasting by different methods.
2. Problems based on cohort analysis.
3. Problems based on regional and rural road network development concept.
4. Problems based on urban mass transit routing and scheduling procedure.
5. Problems based on freight demand and goods transportation.
6. Planning and design of truck terminal

**Open Ended Problems:**

**Review Presentation (RP):** The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website