

Branch Name:	CIVIL ENGINEERING
Program Code:	ET106
Course Title:	Urban Transportation System
Course Code:	2ET1060605T
Pre-requisite Course:	To study of this subject imparts knowledge of urbanization process, urban transportation system planning, land use planning, travel demand modeling procedure, different urban mass transportation systems and urban goods movement.

Course Objectives:

CO-1: To provide safe, economic, timely and comfortable urban mass transportation systems.

CO-2: To reduce private vehicle trips which ultimately reduce traffic congestion, accidents and environmental pollution.

CO-3: To knowledge of urbanization process, urban transportation system planning, land use planning, travel demand modeling procedure, different urban mass transportation systems

CO-4: To reliable mass transportation systems to cater the increased need of the passengers and goods trips within urban as well as suburban area.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
4	3	1	-	4	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topic	Total Hours	Weight age (%)
01	Introduction Urbanization, urban class groups, transportation problems and identification, impacts of transportation, urban transport system planning process, modelling techniques in planning.	04	10
02	Urban mass transportation systems: Urban transit problems, travel demand, types of transit systems, public, private, para-transit transport, mass and rapid transit systems, BRTS and Metro rails, capacity, merits and comparison of systems, coordination, types of coordination.	06	15
03	Land Use and Surveys: Introduction to land use planning models, land use and transportation interaction. The transportation study area definition; division into traffic zones; network identification and coding; types of trips, characteristics of various surveys; home interview; roadside survey; goods, mass transit and intermediate public transport surveys; sampling and expansion factors; accuracy checks, screen line checks, consistency checks.	09	20

04	Travel demand modeling: Trip generation-zonal regression and category analysis, Trip distribution-growth factor models, gravity model, opportunity models, Desire line diagram. Modal split analysis-trip end models, trip interchange models, logit models, Trip assignment techniques-route choice, diversion curves, shortest path algorithms, all- or-nothing assignment, capacity restraint models and Direct demand models.	15	35
05	Mass transit systems: Introduction to routing and scheduling, transit system's performance parameters. Corridor identification and corridor screen line analysis. Urban forms and structures: point, linear, radial poly-nuclear developments and suitable transit systems, Urban good movement. Preparation of comprehensive plan and transportation system management planning, Intelligent Transportation System (ITS).	08	20

List of Text and Reference Books:

1. C. S. Papacostas, Fundamentals of Transportation System Analysis, PHI.
2. Khisty, C J., Transportation Engineering – An Introduction, Prentice-Hall, NJ
3. B.G.Hutchinson, Principles of urban transportation system planning- McGraw-Hill
4. Kadiyali L.R., Traffic Engineering and Transport Planning, Khanna Publishers
5. S.C. Saxena, Traffic Planning and Design, Dhanpat Rai Pub., New Delhi.
6. Blunder and Black, Land use Transportation System
7. J.Ortuzer and L.G. Willumsen, Modelling Transport, Johan Wiley and Sons Chincester,1994

E-Resources:

1. <http://nptel.ac.in/>

Course Learning Outcomes (CLO):

1. Carry out trip generation, trip distribution, modal split and trip assignment analysis.
2. Reduce private vehicle trips which ultimately reduce traffic congestion, accidents and environmental pollution.
3. Knowledge of urbanization process, urban transportation system planning, land use planning, travel demand modeling procedure, different urban mass transportation system.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Carry out trip generation, trip distribution, modal split and trip assignment analysis.	L-2
CLO2	Reduce private vehicle trips which ultimately reduce traffic congestion, accidents and environmental pollution.	L-1
CLO3	Knowledge of urbanization process, urban transportation system planning, land use planning, travel demand modeling procedure, different urban mass transportation system.	L-4

L1- Remember, **L2-** Understand, **L3-** Apply, **L4-** Analyze, **L5-** Evaluate, **L6-** Create

Mapping of CLOs with POs & PSOs

	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
Course Learning Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CLO1	H	M	M	M			M					M	M	M	
CLO2	H	H	M	M			M					M	M	M	M
CLO3	M	H	M	M	M	M	L	L				M	M	M	M

H: High, **M:** Medium, **L:** Low