

**Transportation Engineering**  
**Public Transportation Planning**
**01TR0210**
**(PEC)**
**Objective of the Course:**

- Transportation engineer should be able to understand, plan and design the efficient mass transportation system along with proper routing, scheduling, infrastructure, management and fare structure.

**Credit Earned: 3**
**Students learning outcomes:**

After successful completion of the course it is expected that student will be able to,

1. To understand the historical growth in public transportation systems, their operation, planning and economics.
2. To plan transit network, define principles of transit network, classify transit types, geometry and characteristics, transit routes and their characteristics.
3. To apply problems of transit routing, scheduling, infrastructure facilities, fare structures and management.
4. To design transit infrastructure facilities like bus stops, rail transit stops, design of terminals, layout of depot and location.
5. To know organizational structure of transit agency, management and personnel, transit system statistics, performance and economic measures, operations, fare structure.

**Teaching and Examination Scheme**

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
03	00	00	03	50	30	20	25	25	150

**Detailed Syllabus**

Sr No.	Title of the unit	Number of hours
<b>1</b>	<b>Development of Public Transit System</b>	<b>06</b>
	Historical Growth, Modes of public transport and comparison, public transport travel characteristics, technology of bus, rail, rapid transit systems, basic operating elements.	
<b>2</b>	<b>Transit Network Planning</b>	<b>09</b>
	Objectives, principles, Intercity and Regional transit system, considerations, transit lines, its capacity – types, geometry and characteristics, transit routes and their characteristics, timed transfer networks, prediction of transit usage, network evaluation, accessibility considerations.	
<b>3</b>	<b>Transit Scheduling</b>	<b>09</b>
	Components, determination of service requirements, scheduling procedure, marginal ridership, crew scheduling.	
<b>4</b>	<b>Transit Infrastructure Facilities</b>	<b>09</b>
	Design of bus stops, rail transit stops, design of terminals – principles of good layout, types of layout, depot location, twin depot concept, crew facilities and amenities	
<b>5</b>	<b>Transit Agency and Economics</b>	<b>09</b>

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	Organizational structure of transit agency, management and personnel, transit system statistics, performance and economic measures, operations, fare structure.	
	<b>TOTAL</b>	<b>42</b>

**Transportation Engineering****Suggested Theory Distribution**

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
05%	05%	20%	25%	25%	20%

**Instructional Method and Pedagogy:**

1. Use of Learning Management system like canvas
2. Demonstration through presentations on power point and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

**Recommended Study Material:****Reference Book:**

1. Vukan R. Vuchic, Urban Transit: Operations, Planning and Economics, Wiley Sons Publishers.
2. Peter White, Public Transport, UCL Press.
3. Kadiyali L.R., Traffic Engineering and Transport Planning, Khanna Publishers.
4. Khisty, C J., Transportation Engineering – An Introduction, Prentice-Hall, NJ.
5. TCRP Report 30, TCRP Report 95, TCRP Report 100.