Master of Technology

Transportation Engineering

Urban Mass Transit System

01TR0106
(PCC)

Objective of the Course:

- To understand the characteristics of various mass transportation systems.
- To learn basic concepts of scheduling and route network design.
- To study operation and management aspects of transit systems.

Credit Earned: 4

Students learning outcomes:

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

1. Design route network
2. Schedule the transit unit and crew.
3. Apply the concept of terminal planning.
4. Have a knowledge of sustainable transportation system.

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)	
04	0	0	04	50	30	20	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	**Introduction**	**04**
	Transit system – Elements, Types, Suitability and Adaptability	
2	**Transit system planning**	**09**
	Necessity of planning, planning based on types of service life, Medium performance transit system and High performance transit system, planning methods and required data collection.	
3	**Scheduling and Route network design**	**12**
	Scheduling : - component, procedure and patterns, bus & crew scheduling, fleet requirement Route network design : - corridor identification, route system, capacity of transit lines, process for improving transit line capacity	
4	**Transit analysis**	**12**

	Transit Networks : types, characteristics Transit System : concept, models, requirement, modelling process Terminal : Planning, bus stop capacity, parking patterns, station capacity, station spacing criteria	
5	**Economics and Financing of Transit system**	**10**
	Transit fare: Structure, Collection and level, public and private integration of transit services, case study of smart city.	
6	**Sustainable Urban Transportation**	**09**
	Promoting non-motorized mode of transport, integrated land use and transport planning, Demand management techniques	
		56

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
5%	5%	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. Black, Alan, Urban Mass Transportation Planning, McGraw- Hill,Inc., New York,1995.
2. Vukan, R. Vuchic, Urban Transit Systems and Technology, John –Wiley & Sons, New Jersey, 2007.
3. Sigurd Grava, Urban Transportation Systems – Choices for Communities, The McGraw-Hill Companies, 2004
4. National Urban Transport Policy
5. Black, William R. Sustainable transportation: problems and solutions, The Guilford Press, 2010