GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Civil Engineering

Course / Subject Code: ME01065041

Course / Subject Name : Transportation System Management and Analysis

w. e. f. Academic Year:	2024-2025
Semester:	1st Semester
Category of the Course:	PEC

Prerequisite:	Basic knowledge of transportation and traffic engineering. Further essential knowledge regarding transportation related data collection and parking is also required.
Rationale:	Due to rapid urbanization and increased vehicle ownership, the role of transportation system management and analysis becomes crucial. The behavior of commuters and their response time also plays important role in the traffic management. It is very much required to understand various TSM techniques in urban area. The role of Mass transportation plays an important role in reducing the pollution and congestion. Availability of proper parking place is very difficult to get in the urban area. The planning of the parking lots is necessary to understand. The course includes the study of traffic operations improvement and parking management.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Make the students aware of low cost techniques for reducing problems of traffic andtransportation system.	R,U
02	Apply concepts of data collection for TSM actions, its implementation and impact analysis.	U,N,A
03	To provide the know-how of demand management, traffic operation improvement and parking management.	N,E
04	Plan Urban Parking facility	A,C

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Methodology & Data Collection : Methodological frame work, objectives and problems, conflicts resolution, strategic categories and action elements, travel behavior impact and response time.	7	15
2.	TSM actions combinations and interactions, impact assessment and evaluation, monitoring and surveillance, Area wide data collection methodology, corridor data collection methodology. TSM Actions: Study of following TSM actions with respect to existing problems.	6	15
3.	Public transportation & HOV treatment : Toll discounts for car Pools during peak periods, park and ride, carpooling, exclusive lanes, priority at ramp terminals, bus transfer stations, limited and skip-stop bus services, shared ride.	9	20
4.	Demand Management : Staggered work hours, flexible work hours, high peak period tolls, shuttle services, circulation services, extended routes.	8	15
5.	Traffic Operations analysis and Improvement : On-street parking ban, freeway ramp control & closure, travel on shoulders, one-way streets, reversible lanes, traffic calming, Right turn phase, right turn lanes, reroute turning traffic.	8	15
6.	Parking Management and analysis : Existing Parking availability and demand analysis. Short term reserved parking, increased Parking rates, time duration limits, expanded off-street parking, Non- Motorized Transport- pedestrian only streets, Dial-a-ride for elderly & handicapped.	7	20
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**20**	**20**	**20**	**20**	**10**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:

1. D, Arlington, Transportation System Management in 1980: State of the Art and Future Directions, Transportation Research Board,1980.
2. Institute of Transportation Engineers, Transportation and Traffic Engg. HandBook, PrenticeHall,1982
3. TRB Publications.

(b) Open source software and website:

MATLAB, OpenOffice, EXCEL, SPSS, ANSYS
http://nptel.ac.in/
www.scilab.org/
https://ocw.mit.edu/courses/transportation-courses

Suggested Course Practical List: If any

1. Traffic data collection on congested/problematic corridor for TSM action.
2. Traffic data collection on congested/problematic traffic network area for TSM action.
3. Analysis of data and suggestion of suitable TSM techniques, preparation of alternatives.
4. Prediction of impacts due to suggested TSM alternatives- either by computer simulation or by actual implementation.
5. Problem solving for the problematic transit operation and parking management.
6. Group discussion on the proposed TSM solutions.

List of Laboratory/Learning Resources Required:

Speed radar Gun

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