GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering(Electric Vehicle Technology)

Subject Code : 3726404

Subject Name : Intelligent Transport Systems

WEF Academic Year:	2023-24
Semester:	2
Category of the Course:	Program Elective

Prerequisite : Fundamental subject

Rationale :

This course of Intelligent Transportation Systems aims to understand the various Intelligent Transportation Systems (ITS), which is an application of computer, electronics, and communication technologies and management strategies in an integrated manner to provide traveler information to increase the safety and efficiency of the road transportation systems.

Course Scheme:

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

Course Content:

Sr. No.	Course Content	No. of Hours	% of Weightage
1	Basics of ITS: Introduction to ITS, Role of ITS in transportation safety and mobility, Challenges and opportunities in ITS, Travel and traffic management, Electronic payment, Emergency management, Information management.	10	25%
2	ITS Architecture: Systems engineering in ITS and ITS architecture: Interoperability, Resource sharing, Logical architecture and Physical architecture.	8	20%
3	ITS Planning: Transportation planning and Integrating ITS into Transportation planning, Freight and Fleet Management. Multi-Model Integration Plan.	8	20%
4	ITS applications: Transportation system management, Traffic operations, Public transportation, Electronic tolling and pricing, Personal transportation, Rural and regional transportation, Sustainable transportation.	8	20%

5	Use of Technologies: Connected Vehicles and autonomous vehicles ,Vehicle Tracking System, Telematics, Advanced vehicle control and safety systems-Adaptive Cruise Control (ACC), head-on collision warning and control, ADAS , Intersection Collision Avoidance -use of vehicle-to-vehicle communications, Vision Enhancement for Crash Avoidance. Driver training with use of AR/VR.	**8**	**15%**
	Total	**42**	**100**

Reference Book:

1. Chowdhury, M. A., and Sadek, A., Fundamentals of Intelligent Transportation Systems Planning, Artech House.
2. Sussman, J. M., Perspectives on Intelligent Transportation Systems (ITS), Springer.
3. Intelligent Transport Systems, Intelligent Transportation Primer, Washington, US, 2001.
4. ITS Hand Book 2000: Recommendations for World Road Association (PIARC) by Kan Paul Chen, John Miles.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
01	To understand the basics of ITS.	RM
02	Understand the systems engineering application in ITS and ITS architecture.	UN
03	Describe the role of ITS and its benefits and challenges in improving the transportation system.	UN
04	Learn about ITS applications in various transportation modes to improve their safety and efficiency.	AN
05	To study and understand the technologies used for ITS.	AP

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Suggested Course Practical List:

1. To Study Vehicle Tracking systems.
2. To Study about Advance Vehicle control and Safety systems.
3. To study the effect of GIS, Camera Surveillance systems in ITS.
4. To Study about signal management Measures.
5. To Study modern Traffic Control Systems used in ITS.
6. To Study about types of Architecture used in ITS.

List of Laboratory/Learning Resources Required:

NA

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