INTELLIGENT TRANSPORTATION SYSTEM

Offering Branches	CE			
Course Category:	HONOURS		**Credits:**	3
Course Type:	Theory		**Lecture-Tutorial-Practical:**	3-0-0
Prerequisites:	20CE3306 – Surveying 20CE3502 – Highway Engineering		**Continuous Evaluation:**	30
			Semester End Evaluation:	70
			Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Identify** and differentiate ITS user services and their components.	K1
CO2	**Predict** appropriate ITS technology to solve real-life traffic problems.	K2
CO3	**Estimate** traffic congestion by the acquisition of big data using advanced devices.	K2
CO4	**Design** and implement suitable ITS and services for effective transportation.	K6
CO5	**Select** suitable standards for effective implementation of ITS.	K1

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2					1			1		1	1	2	1
CO2	2					2			2		2	2	2	2
CO3	3					2			2		2	2	3	2
CO4	2					3			3		3	3	2	3
CO5	2					1			1		1	1	2	1
Avg.	**2**					**2**			**2**		**2**	**2**	**2**	**2**

1- Low	2-Medium	3-High

Course Content

UNIT-1	**ITS History and Applications:** ITS Background and Telemetric systems: Definitions, features, and objectives of ITS, History of ITS and its development worldwide, telemetric concept, transport telemetric, telemetric structure, ITS taxonomy, ITS application areas, uses.	CO1
UNIT-2	**ITS User Services:** Infrastructure based services; Arterial management and integration, freeway/highway management, crash prevention and safety, road weather management, roadway operation and maintenance, transit management, emergency management, Electronic payment and pricing, traveller information, COV, Intelligent vehicle-based services; Collision notification and avoidance system, driver assistance system	CO2
UNIT-3	**ITS Components, Tools, and Strategies:** Components of user services; advanced traffic management system, advanced traveller information system, advanced vehicle control system, commercial vehicle operational management, advanced public transportation system, electronic payment system, advanced rural transportations, security and safety systems, urban traffic control, scoot, and scat systems, benefits and limitations.	CO3
UNIT-4	**Design and Implementation:** Design components; data acquisition methods, equipment and used technology, radar and sensor, detectors, vehicle identifiers, and GPS, Communication tools; DSRC, CALM, traveller information tools, data handling, processing and management; TCM, and its working, worldwide ITS implementation and challenges, Traffic Command and Control Centre design and implementation, System Integrator and Smart Transportation Management	CO4
UNIT-5	**ITS Standards:** ITS standards, development process, legal issues, financial issues, Mainstreaming ITS; integration and up-gradation; Future of ITS	CO5

Learning Resources

Text Books	1. Fundamentals of Intelligent Transportation Systems Planning, M.A. Chowdhury

	and A. Sadek, Artech House, 2010, First Edition.
	2. Intelligent Transport Systems, Sarkar, Pradip Kumar, and Amit Kumar Jain, PHI Learning, 2018, First Edition.
	3. Perspectives on Intelligent Transportation Systems (ITS), J.M. Sussman, Springer, 2005, First Edition.
Reference Books	1. Economic Impacts of Intelligent Transportation Systems: Innovations and Case Studies, Bekiaris and Y.J. Nakanishi, Elsevier/JAI, 2004.
	2. IET Intelligent Transport Systems and 15th International IEEE Conference on Intelligent Transportation Systems (ITSC), September 2012.
	3. Intelligent Transport Systems Standards, Bob Williams, Artech House Publishers, 2008.
	4. Intelligent Transport Systems: Cases and Policies, RogerStough, Edward Elgar, 2001.
	5. Intelligent Vehicle Technologies – Theory and Applications, L. Vlacic, M. Parent, F. Harashima, Butterworth-Heinemann, 2010. 6. The Imp
e- Resources & other digital material	1. http://digital-library.theiet.org/content/journals/iet-its
	2. http://digital-library.theiet.org/content/journals/iet-its
	3. http://www.tandfonline.com/toc/gits20/current
	4. https://www.its.dot.gov/history/pdf/HistoryofITS_book.pdf