19CE4701C – TRANSPORTATION INFRASTUCTURE ENGINEERING

Course Category:	Program Elective		Credits:	3
Course Type:	Theory		Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	19BS1101- Engineering Mathematics - I 19CE3502 - 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	**Comprehend** the sleepers, ballast and rail joints of railways	K2
CO2	**Study** the signalling and railway station	K2
CO3	**Study** the airport planning, lighting and marking	K2
CO4	**Understand** the harbour structure and navigational aids	K2
CO5	**Comprehend** the concept of transit system and bus route network planning	K2

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	2						2	1
CO2						2	2						2	1
CO3						2	2						2	1
CO4						2	2						2	1
CO5						2	2						2	1
Avg.						2	2						2	1

1- Low	2-Medium	3-High

Course Content

UNIT-1	**Rails and Rail Joints:** Permanent way, forces acting on rails, function of rails, rail joints **Sleepers and Ballast:** Sleepers and ballast types and functions, elements of junctions and layouts	CO1
UNIT-2	**Signaling of Railways:** Objectives, classifications, signaling systems, mechanical and electrical signaling systems, systems for controlling train movement **Railway Station and Yards:** Site selection, facilities, classification, platforms, types of yards	CO2
UNIT-3	**Airport Planning:** International Civil Aviation Organization, Directorate General of Civil Aviation, Airports Authority of India; Airport planning studies: airport system plan, airport site selection **Airport Lighting & Marking:** Runway lighting, taxiway lighting; Runway and taxiway marking	CO3
UNIT-4	**Harbour Structures:** Jetties, fenders, piers, wharves **Navigational Aids:** Light houses, beacon lights, floating navigational aids, buoys, radar	CO4
UNIT-5	**Transit Systems:** Role of Transit - Types of Transit Modes - Buses - LRT, Air cushioned and Maglev System **Bus Route Network Planning:** Route Systems - Route Location, Route Structure	CO5

Learning Resources

Text Books	1.Saxena S.C. and S.P. Arora, A text book of Railway Engineering, Dhanpat Rai,

	2010.
	2. Khanna, S. K., Arora, M. G., and Jain, S. S. Airport planning and Design, Sixth Edition, Nem Chand and Bros, Roorkee, India, 2012
	3. Bindra, S.P.A Course in Docks and Harbour Engineering, Dhanpat Rai and Sons, New Delhi, India, 1992
Reference Books	1. Railway Engineering by Agarwal M.M., Prabha & Co, New Delhi, 2012.
	2. Airport Engineering by Rao G.V., Tata Mc Graw Hill, New Delhi, 1992.
	3. Dock and Harbour engineering by Oza H.P. and Oza G., Anand Chartor Publishing House Pvt , Gujarat, 2010.
e-Resources& other digital material	1. http://nptel.ac.in/courses.php
	2. http://jntuk-coeerd.in/
	3. NPTEL :: Civil Engineering - Transportation Engineering II