BCE-503	Transportation Engineering	2L:0T:0P	2credits

Pre-requisites: It is the transportation engineer's responsibility to plan, design, build, operate and maintain these systems of transport, in such a way as to provide for the safe.

Course Objectives:

CO1	To introduce principles and practice of transportation engineering
CO2	To impart analytical knowledge of highway cross section elements, alignment and intersections.
CO3	To know the principles of geometric design for various transportation facilities.
CO4	To learn about various characteristics, testing methods, and standard specification of different highway materials considering the serviceability requirements of pavements.

Module 1:

Highway development and planning-Classification of roads, road development inIndia, Current road projects in India; highway alignment and project preparation.

Module 2:

Geometric design of highways-: Introduction; highway cross section elements;sight distance, design of horizontal alignment; design of vertical alignment; design ofintersections, problems.

Traffic engineering & control- Traffic Characteristics, traffic engineering studies,traffic flow and capacity, traffic regulation and control; design of road intersections

Module 3:

Pavement materials- Materials used in Highway Construction- Soils, Stoneaggregates, bituminous binders, bituminous paving mixes; Portland cement and cementconcrete: desirable properties, tests, requirements for different types of pavements. Problems

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Module 4:

Design of pavements- Introduction; flexible pavements, factors affecting designand performance; stresses in flexible pavements; design of flexible pavements as per IRC rigid pavements- components and functions; factors affecting design and performance of CCpavements; stresses in rigid pavements; design of concrete pavements as per IRC: problems

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Course Outcomes: After the completion of the course the student will be able to:

CO1	To understand the principles of Highway geometrics design as per IRC standards
CO2	To understand Types of pavements & Materials required for highway construction.
CO3	Perform geometric design for the Highway& Basic concept of Pavement design
CO4	Understand basics of alignment, curves and sight distance.
CO5	Apply the construction and maintenance aspects of roads
CO6	To understand the Traffic engineering& different types of traffic control device.

Text/Reference Books:

1. Khanna, S.K., Justo, C.E.G and Veeraragavan, A, 'Highway Engineering', Revised 10th Edition, Nem Chand & Bros,2017
2. Kadiyalai, L.R., ' Traffic Engineering and Transport Planning', KhannaPublishers.
3. ParthaChakraborty; ' Principles Of Transportation Engineering, PHILearning,AICTE Model Curriculum for Undergraduate degree in Civil Engineering (Engineering & Technology)
4. Fred L. Mannering, Scott S. Washburn, Walter P. Kilareski,'Principles of HighwayEngineering and Traffic Analysis', 4th Edition, JohnWiley
5. Srinivasa Kumar, R, Textbook of Highway Engineering, Universities Press,2011.
6. Paul H. Wright and Karen K. Dixon, Highway Engineering, 7th Edition, Wiley StudentEdition,2009.

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