

Approval: 9th Senate Meeting

Course Number: CE 352

Course Name: Transportation Engineering

Credits: 3-0-0-3

Prerequisites: None

Intended for: UG

Distribution: Discipline Core

Semester: Odd/Even

Preamble: With the present condition of increase in the population in the urban and major cities of the world, there needs a serious thought about the connectivity and transit facilities for goods, commodities and people. Transportation engineering majorly deals with the planning, design and analysis aspects of the connectivity with rail-road-water-air network with suitability, adoptability and passenger characteristics. Such a study would be helpful in understanding the requirements of a transportation facility and its working.

Course Outline: The course includes various aspects of planning of network, design of pavements and failure analysis related to the aspects of road connectivity. It also includes various materials required, their characteristics and tests associated for adoptability. Also the course highlights the maintenance issues with the characteristics and studies required for traffic design. The student shall also be introduced with the other transportation system such as rail & air connectivity and recent developments of ITS.

Modules:

1. Introduction to transportation engineering: various methods of transportation and their importance, PMGSY, Golden quadrilateral and other road development plans of GOI. **(6 contact hours)**
2. Geometrical design, camber, super elevation cross-sectional elements, sight distances, horizontal and vertical alignments, transition curves. **(12 contact hours)**
3. Highway Engineering: Pavement material and characterization, aspects of analysis and design of flexible and rigid pavements. **(7 contact hours)**
4. Highway Planning & maintenance, types of failure, evaluation and remedial measures.
(7 contact hours)
5. Traffic Engineering: Vehicle and driver characteristics, Traffic design studies. **(5 contact hours)**
6. Introduction to rail and air transport system, intelligent transport system. **(5 contact hours)**

Text Books:

- a) S.K. Khanna and C.E.G. Justo, 'Highway Engineering', Nem Chand Bros., 2002.
- b) Kadiyali L.R., 'Principles and Practice of highway Engineering', Khanna Publishers, Delhi, 1992.
- c) Khistry, C.J. and B. K. Lall, 'Transportation Engineering – An Introduction', Prentice Hall of India Ltd., New Delhi, 2003.

Reference Books:

- a) Garber, N.J., Hoel, L.A., 'Traffic and Highway Engineering', West Publishing Company, New York, 2014.
- b) P. Chakroborty and A. Das, 'Principles of Transportation Engineering', Prentice Hall India, 2003.
- c) S.C. Saxena and S.P. Arora, 'A text book of Railway engineering', Dhanpat Rai, 2001.