CE 303: Transportation Engineering – I (3-0-0: 3)

Course objectives: To understand the importance of transportation and characteristics of road transport; To know about the history of highway development, surveys and classification of roads; To study about the geometric design of highways; To study about traffic characteristics and design of intersections; To know about the pavement materials and design

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Introduction
Road Development Plans and Classification of Roads

Geometric Design
Cross-section elements, Sight distance, Horizontal and vertical alignment, Horizontal and Vertical Curves

Pavement material and construction
Pavement materials and their characterization, Properties of Subgrade, Aggregates &Bitumen, Design of Bituminous Mixes, Quality control and use of alternate materials in road construction

Pavements Design& Analysis
Types of pavements, Types and Functions of Pavement Components,Stresses and Strains in Flexible Pavements, Stresses and deflections in Rigid Pavement, Design of flexible and rigid pavements

Text Books:

1. *Khanna S.K. and Justo*,"*Highway Engineering"*, CEG, Nemchand Bros
2. *Yang H. Huang, "Pavement Analysis and Design"*

.**References:**

1. *Yoder E.J., and Witteza M.W,* "*Principles of Pavement Design",* John Willey & Sons.
2. *William W. Hay, "An Introduction to Transportation Engineering*", Toppan Co. Ltd, Tokyo
3. *MORT& H,* "*Specifications of Road and Bridge Works*"
4. *Relevant IRC Codes*, Indian Roads Congress, Delhi
4. *Khisty, C.J. and Lall, B.K.,"Introduction to Transportation Engineering",* Prentice-Hall India

Expected Outcomes: On completion of the course, the students will be able to: carry out surveys involved in planning and highway alignment; design cross section elements, sight distance, horizontal and vertical alignment implement traffic studies, traffic regulations and control, and intersection design; determine the characteristics of pavement materials; design flexible and rigid pavements as per IRC
