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<b>B.Tech</b>	<b>IV Year</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>To</b>	<b>C</b>
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### CE427 TRANSPORTATION ENGINEERING

#### **Course Description and Objective:**

*At the end of this course, students are expected to know planning of highways, fixing of the best alignment, design of various Geometric elements, pavement design, and construction of the roads. Also the students are expected to design surface drainage system for pavements.*

#### **Course Outcomes:**

- *Plan highway networks*
- *Design highway geometrics*
- *Design Intersections and prepare traffic management plans*
- *Design flexible and rigid pavements*
- *understand the principles of construction and maintenance of highways*

#### **UNIT – I**

**Highway Development and Planning:** Brief Introduction; necessity of highway planning; surveys; preparation of master plan; highway planning in India.

**Highway alignment:** Factors controlling alignment; Engineering surveys, Drawings & reports.

#### **UNIT – II**

**Highway Geometric Design:** Highway cross section elements; Sight distance; Design of horizontal alignment; Design of vertical alignment.

**Highway materials:** Sub grade soils- CBR tests; Stone aggregates; Bitumen materials; Paving mixes.

#### **UNIT – III**

**Design of Highway Pavements:** Design factors; Design of flexible pavements – IRC method, IRC recommendations; Design of Rigid pavements - Westergard's stress equation for wheel loads and temperatures stress; IRC recommendations.

**UNIT – IV**

**Highway construction and maintenance:** Construction of water bound macadam roads; Bituminous pavements and cement concrete pavements; Construction of joints in cement concrete pavements; Maintenance of highways- Water bound macadam roads, Bituminous pavements, Cement concrete pavements, Highway drainage.

**UNIT – V**

**Traffic engineering:** Basic Parameters of Traffic-Volume, Speed and Density- Traffic Volume Studies- Data Collection and Presentation-speed studies- Data Collection and Presentation

Design of Traffic Signals –Webster Method –IRC Method.Types of At-Grade Intersections- Channelization: Objectives –Traffic Islands and Design criteria- Types of Grade Separated Intersections.

**TEXT BOOKS :**

1. S. K. Khanna & C. E. G. Justo , “Highway Engineering”, 8<sup>th</sup> ed., Nemchand & Brothers, Roorkee, 2001.
2. Partha Chakroborty & Animesh Das, “Principles of Transportation Engineering”, 2<sup>nd</sup> ed., Prentice Hall of India, New Delhi, 2003.

**REFERENCE BOOKS :**

1. G. Venkatappa Rao, “Principles of Transportation Engineering and Highway Engineering”, 3<sup>rd</sup> ed., Tata Mc Graw-Hill Publishing Company Limited, New Delhi, 2000.
2. Traffic Engineering & Transportation Planning – Dr.L.R.Kadyali, Khanna publications – 6th Edition – 1997