Year & Sem: E2S1	Course Code: CE2203	Course Name: **Transportation Engineering**	No. of Credits: 4	L	T&PS	P
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UNITI: Highway Development and Planning

Highway development in India, Necessity for Highway Planning, Different Road Development Plans, Classification of Roads, Road Network Patterns, Planning Surveys, Highway Alignment and factors affecting Alignment, Engineering Surveys.

UNIT II :Highway Geometric Design

Importance of Geometric Design**,** Design controls and Criteria**,** Highway Cross Section Elements**,** Sight Distance Elements-SSD, OSD &ISD, Design of Horizontal Alignment: Super elevation, Extra widening, Transition Curves, Design of Vertical alignment, Gradients, Vertical curves.

UNIT III: Highway Materials

Subgrade soil: classification by group index method (HRB), Subgrade soil strength: California bearing ratio, modulus of subgrade reaction. Bituminous materials: types & desirable properties, Tests on bitumen, Tests on Aggregates, Bituminous paving mixes: Marshall Method of mix design.

UNIT IV: Design of Flexible Pavements

Objectives & Requirements of pavements, Types of Pavements**,** Functions of pavement components, Design factors, Flexible Pavement Design Methods: CBR method, IRC method, Burmister method, Mechanistic method, IRC Method for low volume flexible pavements.

UNIT V: Design of Rigid Pavements

Design Considerations: wheel load stresses, temperature stresses, frictional stresses, combination of stresses, Design of slabs , Design of joints, IRC method, Rigid pavements for low volume roads, Continuously reinforced cement concrete pavements, Roller compacted concrete pavements**.**

UNIT VI: Highway Construction &Drainage

Types of highway construction, Earthwork, Preparation of subgrade, Construction of earth roads, Construction of gravel roads, and Construction of water bound macadam roads, Construction of bituminous pavements, Construction of cement concrete pavements. Highway Drainage, surface and sub surface drainage.

UNIT VII: Traffic Engineering

Introduction, Traffic Characteristics, Traffic Operations, Design Intersections, Design of Parking Facility, Highway Lighting, Traffic Planning and Administration.

References/Text Books:

1. Khanna& Justo, Highway Engineering, Nem Chand & Bros, Roorkee, 5th edition, reprint 1984.
2. Dr. L.R. Kadiyali& Dr. N.B.Lal, Principles and Practice of Highway Engineering, Khanna Publication.
3. ParthaChakraborthy&Animesh Das, Principles of Transportation Engineering, Prentice Hall of India Publications.
4. L.R.Kadiyali, Traffic Engineering, Khanna Publishers, 7th edition 2007.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. http://www.nptelvideos.in/2012/11/introduction-to-transportation.html and rgukt intranet