PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Civil Engineering

Faculty Name: - Ravinder Kumar Subject Name: - Transportation Engineering
Year/Semester: - 2021/3rd /6th Subject Code: - CE-304A

LESSON PLAN

Sr. No.	Lecture No.	Topics To Be Covered
1	L-1	**UNIT-I,** Transportation and its importance
2	L-2	Different modes of transportation. Brief review of history of road development in India and abroad
3	L-3	Roman, Tresagne, Telford and Macadam constructions
4	L-4	Road patterns. Classification of roads
5	L-5	Objectives of highway planning, Planning surveys. Saturation system of planning.
6	L-6	Traffic Characteristics and Traffic Surveys: Road user and vehicular characteristics.
7	L-7	Traffic studies such as volume, speed and O & D study
8	L-8	Parking and accident studies. Fundamental diagram of traffic flow
9	L-9	Level of service. PCU. Capacity for non-urban roads.
10	L-10	Causes and preventive measures for road accidents.
11	L-11	Traffic control devices: signs, signals
12	L-12	Markings and islands. Types of signs. Types of signals. Design of an isolated fixed time signal by IRC method.
13	L-13	**UNIT-II Design of Flexible Pavements:** Types of pavements. Flexible and rigid pavements
14	L-14	Components of a pavement and their functions. Factors affecting design of pavements
15	L-15	Design of thickness of a flexible pavement by Group Index method, CBR method
16	L-16	(including latest IRC guidelines), Triaxial method and Burmister's method.
17	L-17	Design Of Rigid Pavements
18	L-18	Westergaard's theory, critical locations of loading,
19	L-19	load and temperature stresses. Critical combination of stresses
20	L-20	IRC guidelines for determination of thickness of a rigid pavement
21	L-21	Joints: requirements
22	L-22	Types, patterns. Spacing of expansion and contraction joints
23	L-23	Functions of dowel and tie bars.
24	L-24	Revision
25	L-25	**UNIT-III** Cross section elements: friction, carriageway
26	L-26	Formation width, land width, camber, IRC recommended values.
27	L-27	Types of terrain Design speed. Sight distance
28	L-28	Stopping sight distance, overtaking sight distance, overtaking zones
29	L-29	Intermediate sight distance, sight distance at intersections,
30	L-30	Head light sight distance, set back distance. Critical locations for sight distance
31	L-31	**Design of Horizontal and Vertical Alignment**: Effects of centrifugal force. Design of super-elevation.
32	L-32	Providing super- elevation in the field. Radius of circular curves. Extra-

		widening.
33	L-33	Type and length of transition curves. Gradient, types, values. Summit curves and valley curves, their design criterion. Grade compensation on curves.
34	L-34	**UNIT-IV Bituminous Materials and Bituminous Mixes:** Types of bituminous materials: bitumen, tar, cutback and emulsions
35	L-35	Various tests, testing procedures and IRS/IS specifications for suitability of bituminous materials in road construction
36	L-36	Bituminous mix, desirable properties. Marshall' method of mix design.
37	L-37	Basic concept of use of polymers and rubber modified bitumen in bituminous mixes
38	L-38	Various types of bituminous constructions. Prime coat, tack coat
39	L-39	Seal coat and surface dressing. Construction of BUSG, Premix carpet,
40	L-40	BM, DBM and AC.
41	L-41	Brief coverage of machinery for costruction of bituminous roads
42	L-42	Bitumen boiler, sprayer, pressure distributer,
43	L-43	Hot-mix plant, cold-mix plant, tipper trucks,
44	L-44	Mechanical paver or finisher, rollers.
45	L-45	Mastic asphalt. Introduction to various IRC and MOST specifications.

RAVINDER KUMAR
(COURSE INCHARGE)