



LESSON PLAN OF 3RD SEMESTER(2026-27) CIVIL ENGINEERING

Discipline :- CIVIL ENGG.	Semester:-3 RD	Name of the Teaching Faculty PRIYABRATA TRIPATHY (Lecturer)
Subject:- TRANSPORTATION ENGINEERING (CEPC203)	No of Days/per Week Class Allotted :-03	Semester From:-01/07/2026 To:- 05/11/2026 No of Weeks:- 19
Week	Class Day	Theory/ Practical Topics
1 st	1 st	Overview of Highway Engineering • Role of transportation in the development of nation, Scope and Importance of roads in India and its Characteristics.
	2 nd	• Different modes of transportation – land way, waterway, airway,
	3 rd	Merits and demerits of roadway and railway;
2 nd	1 st	• General classification of roads.
	2 nd	• Selection and factors affecting road alignment
	3 rd	Geometric Design of Highway • Camber: Definition, purpose, types as per IRC– recommendations
3 rd	1 st	Kerbs: Road margin, road formation, right of way.
	2 nd	Design speed and various factors affecting design speed as per IRC – recommendations.
	3 rd	Gradient: Definition, types as per IRC – Recommendations *
4 th	1 st	Sight distance (SSD): Definition, types IRC – recommendations
	2 nd	simple numerical.
	3 rd	Curves: Necessity, types
5 th	1 st	Horizontal, vertical curves
	2 nd	Extra widening of roads
	3 rd	numerical examples
6 th	1 st	Super elevation: Definition, formula for calculating minimum and maximum Super elevation
	2 nd	method of providing super-elevation
	3 rd	Standards cross-sections of national highway in embankment and cutting
7 th	1 st	Construction of Road Pavements • Types of road materials and their Tests
	2 nd	– Test on aggregates-Flakiness and Elongation Index tests,
	3 rd	Angularity Number test, test on Bitumen- penetration, Ductility
8 th	1 st	Flash and Fire point test and Softening point test.
	2 nd	Pavement – Definition, Types, Structural Components of pavement and their functions
	3 rd	• Construction of WBM road. Merits and demerits of WBM & WMM road.
9 th	1 st	Construction of Flexible pavement / Bituminous Road, Types of Bitumen and its proper- ties
	2 nd	Emulsion, Cutback, Tar, Terms used in BR-prime coat
	3 rd	, tack coat, seal coat, Merits and Demerits of BR.

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10 th	1 st	• Cement concrete road -methods of construction
	2 nd	Alternate and Continuous Bay Method
	3 rd	Construction joints, filler and sealers, merits and demerits of concrete roads.
11 th	1 st	Types of joints.
	2 nd	Basics of Railway Engineering • Classification of Indian Railways, zones of Indian Railways
	3 rd	Permanent way: Ideal requirement, Components; Rail Gaugetypes, factors affecting selection of a gauge.
12 th	1 st	Permanent way: Ideal requirement, Components; Rail Gaugetypes, factors affecting selection of a gauge.
	2 nd	Rail, Rail Joints - requirements, types.
	3 rd	• Creep of rail: causes and prevention.
13 th	1 st	• Sleepers - functions and Requirement, types - concrete sleepers and their density
	2 nd	• Ballast - function and types, suitability.
	3 rd	Rail fixtures and fastenings – fish plate, spikes, bolts, keys, bearing plates
14 th	1 st	Track geometrics, Construction and Maintenance
	2 nd	• Alignment- Factors governing rail alignment.
	3 rd	• Track Cross sections – standard cross section of single and double line in cutting and embankment
15 th	1 st	Important terms-permanent land, formation width, side drains,
	2 nd	• Railway Track Geometrics: Gradient, curves- types and factors affecting grade compensation, super elevation, limits of Super elevation on curves
	3 rd	cant deficiency, negative cant, con- ing of wheel, tilting of rail.
16 th	1st	cant deficiency, negative cant, con- ing of wheel, tilting of rail.
	2nd	• Branching of Tracks, Points and crossings
	3rd	Turn out- types, components, functions and inspection
17 th	1st	Track junctions: crossovers, scissor cross over, diamond crossing, track triangle.
	2nd	• Station -Purpose, requirement of railway station, important technical terms
	3rd	types of rail- way station, factors affecting site selection for railway station. Function & drawbacks of marshalling yards.
18 th	1st	• Track Maintenance- Necessity, Classification,
	2nd	Tools required for track maintenance with their functions, Organisation of track maintenance
	3rd	Duties of permanent way inspector, gangmate and key man.
19 th	1st	Discussion of previous topic
	2nd	Discussion of previous topic
	3rd	Discussion of previous topic

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