

LESSON PLAN

Week	Class Day	Topics	Remarks
Department: Civil Engineering		Name of the Teaching faculty: AMIT KUMAR CHAKRABARTY	
Subject :- Th 3. Railway And Bridge Engineering		Semester from date: 01/07/2024 to 08/11/2024	
No.of Days/ week class allotted : 4		No. of Weeks :19	
		Topics to be covered:-	
8th WEEK		1. Introduction (2P)	
	1st	1.1 Railway terminology	
	2nd	1.2 Advantages of railways 1.3 Classification of Indian Railways	
		2. Permanent way (5)	
	3rd	2.1 Definition and components of a permanent way	
9th WEEK	1st	2.1 Definition and components of a permanent way	
	2nd	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
	3rd	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
	4th	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
10th WEEK		3.Track materials (10)	
	1st	3.1 Rails Functions and requirement of rails	3.1.1
	2nd	3.1.2 Types of rail sections, length of rails 3.1.3 Rail joints – types, requirement of an ideal joint	
	3rd	3.1.4 Purpose of welding of rails & its advantages	
	4th	3.1.5 Creep- definition, cause & prevention	
11th WEEK	1st	3.2 Sleepers	
	2nd	3.3 Ballast 3.3.1 Functions & requirements of ballast	
	3rd	3.3.2 Materials for ballast	
	4th	3.3.2 Materials for ballast 3.4 Fixtures for Broad gauge	
12th WEEK	1st	3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers	
	2nd	3.4.2 Connection of rails to sleepers	
		4. Geometric for broad gauge (10)	
	3rd	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
	4th	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
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13th WEEK	2nd	4.2 Permanent & temporary land width	
	3rd	4.3 Gradients for drainage	
	4th	4.3 Gradients for drainage	
14th WEEK	1st	4.4 Super elevation – necessity & limiting valued	
	3rd	4.4 Super elevation – necessity & limiting valued	
	4th	4.4 Super elevation – necessity & limiting valued	
15TH WEEK	PUJA VACATION		
16th WEEK	1st	4.4 Super elevation – necessity & limiting valued	
		5. Points and crossings (4P)	
	3rd	5.1 Definition, necessity of Points and crossings	
	4th	5.1 Definition, necessity of Points and crossings	
17th WEEK	1st	5.2 Types of points & crossings with tie diagrams	
	2nd	5.2 Types of points & crossings with tie diagrams	
		6. Laying & maintenance of track (4P)	
	3rd	6.1 Methods of Laying & maintenance of track	
	4th	6.1 Methods of Laying & maintenance of track	
18th WEEK	1st	6.1 Methods of Laying & maintenance of track	
	2nd	6.2 Duties of a permanent way inspector	
		Section B:- BRIDGES	
		1. Introduction to bridges (2P)	
	4th	1.2 Components of a bridge	
19th WEEK	1st	1.3 Classification of bridges 1.4 Requirements of an ideal bridge	
		2. Bridge site investigation (5P)	
	2nd	2.1 Selection of bridge site, Alignment	
	3rd	2.2 Determination of Flood Discharge	
	4th	2.2 Determination of Flood Discharge	
		2.3 Waterway & economic span	
		2.4 Afflux, clearance & free board	
		3. Bridge foundation (8P)	
		3.1 Scour depth minimum depth of foundation	
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		3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
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		3.3 Coffor dams	
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	4. Bridge substructure and approaches (5P)		
	4.1 Types of piers		
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	4.2 Types of abutments		
EXTRA CLASSES REQUIRED			

4.3 Types of wing walls	
4.4 Approaches	
5. Culvert & Cause ways(5P)	
5.1 Types of culvers – brief description	
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5.2 Types of causeways – brief description	
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Amit Kumar Chakrabarty

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