

## LESSON PLAN OF Railway And Bridge Engineering 5TH SEM SECTION A

Department: Civil Engineering	Semester : 5TH	Name of the Teaching faculty: ARPITA ROUT	
Subject :- Th 3. Railway And Bridge Engineering	No.of Days/ week class allotted : 4	Semester from date: 15/09/2022 to 22/12/2022 covered:-	No. of Weeks :15 Topics to be
Week	Class Day	Topics	Remarks
1 st Week: (15 th Sept- 17th Sept)		1. Introduction (2P)	
	3 <sup>rd</sup>	1.1 Railway terminology	
	4 <sup>th</sup>	1.2 Advantages of railways 1.3 Classification of Indian Railways	
2nd Week: (19 th Sept - 24 th Sept)		<b>2. Permanent way (5P)</b>	
	1 <sup>st</sup>	2.1 Definition and components of a permanent way	
	2 <sup>nd</sup>	2.1 Definition and components of a permanent way	
	3 <sup>rd</sup>	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
	4 <sup>th</sup>	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
3rd week: (26th Sept- 01 Oct)	1 <sup>st</sup>	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
		<b>3.Track materials (10P)</b>	
	2 <sup>nd</sup>	3.1 Rails	
	3 <sup>rd</sup>	3.1.1 Functions and requirement of rails 3.1.2 Types of rail sections, length of rails	
	4 <sup>th</sup>	3.1.3 Rail joints – types, requirement of an ideal joint 3.1.4 Purpose of welding of rails & its advantages	
4th week	<b>Vacation</b>		
	1 <sup>st</sup>	3.1.5 Creep- definition, cause & prevention	

5 th Week: (10 th Oct- 15 th Oct)	2 <sup>nd</sup>	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers 3.2.2 Classification of sleepers, Advantages, Disadvantages of sleepers	
	3 <sup>rd</sup>	3.3 Ballast 3.3.1 Functions & requirements of ballast	
	4 <sup>th</sup>	3.3.2 Materials for ballast	
6 th Week: (17 th Oct- 22 nd Oct)	1 <sup>st</sup>	3.3.2 Materials for ballast 3.4 Fixtures for Broad gauge	
	2 <sup>nd</sup>	3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers	
	3 <sup>rd</sup>	3.4.2 Connection of rails to sleepers	
	4 <sup>th</sup>	<b>Section B:- Introduction to bridges (2P)</b> 1.1 Definitions 1.2 Components of a bridge	
7 th Week: (25 th Oct- 29th Oct)	1 <sup>st</sup>	1.3 Classification of bridges 1.4 Requirements of an ideal bridge	
		<b>2. Bridge site investigation (5P)</b>	
	2 <sup>nd</sup>	1.3 Classification of bridges 1.4 Requirements of an ideal bridge	
	3 <sup>rd</sup>	2.2 Determination of Flood Discharge	
8 th Week: (31st oct- 5th Nov)	4 <sup>th</sup>	2.2 Determination of Flood Discharge	
	1 <sup>st</sup>	2.3 Waterway & economic span	
	2 <sup>nd</sup>	2.4 Afflux, clearance & free board	
		<b>Section A:- 4. Geometric for broad gauge (10P)</b>	
9 th Week: (7 th Nov- 12 th Nov)	3 <sup>rd</sup>	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
	4 <sup>th</sup>	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
	2 <sup>nd</sup>	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment	

7 <sup>th</sup> to 12 <sup>th</sup> Nov	3 <sup>rd</sup>	4.2 Permanent & temporary land width	
	4 <sup>th</sup>	4.3 Gradients for drainage	
10 <sup>th</sup> Week: (14 <sup>th</sup> Nov -19 <sup>th</sup> Nov)	1 <sup>st</sup>	4.3 Gradients for drainage	
	2 <sup>nd</sup>	4.4 Super elevation – necessity & limiting valued	
	3 <sup>rd</sup>	4.4 Super elevation – necessity & limiting valued	
	4 <sup>th</sup>	4.4 Super elevation – necessity & limiting valued	
11 <sup>th</sup> Week: (21 <sup>st</sup> Nov - 26 <sup>th</sup> Nov)	1 <sup>st</sup>	4.4 Super elevation – necessity & limiting valued	
		<b>5. Points and crossings (4P)</b>	
	2 <sup>nd</sup>	5.1 Definition, necessity of Points and crossings	
	3 <sup>rd</sup>	5.1 Definition, necessity of Points and crossings	
12 <sup>th</sup> Week: (28 <sup>th</sup> Nov -3 <sup>rd</sup> Dec)	4 <sup>th</sup>	5.2 Types of points & crossings with tie diagrams	
	1 <sup>st</sup>	5.2 Types of points & crossings with tie diagrams	
		<b>6. Laying &amp; maintenance of track (4P)</b>	
	2 <sup>nd</sup>	6.1 Methods of Laying & maintenance of track	
13 <sup>th</sup> Week: (5 <sup>th</sup> Dec -10 <sup>th</sup> Dec)	3 <sup>rd</sup>	6.1 Methods of Laying & maintenance of track	
	4 <sup>th</sup>	6.1 Methods of Laying & maintenance of track	
	1 <sup>st</sup>	6.2 Duties of a permanent way inspector	
		<b>Section B:- 3. Bridge foundation (8P)</b>	
14 <sup>th</sup> Week: ( 12 <sup>th</sup> Dec- 17 <sup>th</sup> Dec)	2 <sup>nd</sup>	3.1 Scour depth minimum depth of foundation	
	3 <sup>rd</sup>	3.1 Scour depth minimum depth of foundatio	
	4 <sup>th</sup>	3.1 Scour depth minimum depth of foundatio	
	1 <sup>st</sup>	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
15 <sup>th</sup> Week: (19 <sup>th</sup> Dec- 22 <sup>nd</sup> Dec)	2 <sup>nd</sup>	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
	3 <sup>rd</sup>	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
	4 <sup>th</sup>	3.3 Cofferdams	
	1 <sup>st</sup>	3.3 Cofferdams	
		<b>4. Bridge substructure and approaches (5P)</b>	
	2 <sup>nd</sup>	4.1 Types of piers	

	3 <sup>rd</sup>	4.1 Types of piers	
<b>Extra Class</b>	1	4.2 Types of abutments	
	2	4.3 Types of wing walls	
	3	4.4 Approaches	
	4	<b>5. Culvert &amp; Cause ways(4P)</b>	
	5	5.1 Types of culvers – brief description	
	6	5.1 Types of culvers – brief description	
	7	5.2 Types of causeways – brief description	
	8	5.2 Types of causeways – brief description	



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