

**BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK**  
**DEPARTMENT OF CIVIL ENGINEERING**



**LESSON PLAN**

SUBJECT: RAILWAY & BRIDGE ENGINEERING (TH 3)

FACULTY: MISS SANDHYARANI BARIK

ACCADEMIC SESSION: 2022-23

SEMESTER: 5<sup>TH</sup>

SEC: A

Sd/-  
H O D (Civil Engg.)

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<b>Discipline: Civil Engineering</b>	<b>Semester:5<sup>th</sup> A</b>		<b>Name of the teaching faculty: SANDHYARANI BARIK</b>
<b>Subject: Railway &amp; Bridge Engineering</b>	<b>No. of Days/ per week class allotted: 04 period per week. (Mon – 01, Wed – 01, Thu – 01, Fri – 01)</b>		<b>Semester From Date: 15/09/2022 To Date: 22/12/2022 No. of weeks: 14 weeks</b>
<b>Week</b>	<b>Class Day</b>	<b>No of period available</b>	<b>Theory Topics</b>
1ST	15/09/2022	1	<b>SECTION- A</b> <b>1.Introduction</b> 1.1 Railway terminology
	16/09/2022	1	1.2 Advantages of railways
2ND	19/09/2022	1	1.3 Classification of Indian Railways.
	21/09/2022	1	<b>2. Permanent way</b> 2.1 Definition and components of a permanent way
	22/09/2022	1	2.2 Concept of gauge, different gauges prevalent in India and suitability of these gauges under different Conditions.
	23/09/2022	1	<b>3. Track materials</b> 3.1 Rails 3.1.1 Function and requirement of rails
3RD	26/09/2022	1	3.1.2 Types of rail sections, length of rails.
	28/09/2022	1	3.1.3 Rail joints – types, requirement of an ideal joint.
	29/09/2022	1	3.1.4 Purpose of welding of rails & its advantage
	30/09/2022	1	3.1.5 Creep- definition, cause and prevention
4TH	10/10/2022	1	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers
	12/10/2022	1	3.2.2 Classification of sleepers
	13/10/2022	1	3.2.3 Advantages & disadvantages of different types of sleeper
	14/10/2022	1	3.3 Ballast 3.3.1 Functions & requirements of ballast

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5TH	17/10/2022	1	3.3.2 Materials for ballast
	19/10/2022	1	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts
	20/10/2022	1	3.4.2 Connection of rails to sleepers
	21/10/2022	1	<b>4.Geometric for broad gauge</b> 4.1 Typical cross sections of single & double broad gauge railway track in cutting and embankment
6TH	26/10/2022	1	4.2 Permanent & temporary land width 4.3 Gradients for drainage
	27/10/2022	1	4.4 Super elevation –necessity & limiting valued.
	28/10/2022	1	<b>Monthly Class Test-1</b>
7TH	31/10/2022	1	Problems on super elevation
	02/11/2022	1	<b>Section – B: BRIDGES</b> <b>1 Introduction to bridges</b> 1.1 Definitions 1.2 Components of a bridge
	03/11/2022	1	1.3 Classification of bridges 1.4 Requirements of an ideal bridge
	04/11/2022	1	<b>2. Bridge site investigation, hydrology &amp; planning</b> 2.1 Selection of bridge site, Alignment
	07/11/2022	1	2.2 Determination of Flood Discharge
8TH	09/11/2022	1	2.3 Waterway & economic span
	10/11/2022	1	2.4 Afflux, clearance & free board
	11/11/2022	1	<b>3. Bridge foundation</b> 3.1 Scour depth minimum depth of foundation
	14/11/2022	1	3.2 Types of bridge foundations – 3.2.1 spread foundation, pile foundation
9TH	16/11/2022	1	<b>INTERNAL ASSESSMENT</b>
	17/11/2022	1	3.2.2 Well foundation – sinking of wells
	18/11/2022	1	3.2.3 caisson foundation
	21/11/2022	1	3.3 Cofferdams
10TH	21/11/2022	1	3.3 Cofferdams

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	23/11/2022	1	<b>5 .Points and crossings</b> 5.1 Definition, necessity of Points and crossings
	24/11/2022	1	5.2 Types of points & crossings with tie diagrams
	25/11/2022	1	<b>Monthly Class Test-2</b>
11TH	28/11/2022	1	<b>6. Laying &amp; maintenance of track</b> 6.1 Methods of Laying and Maintenance of track
	30/11/2022	1	6.2 Duties of a permanent way inspector
	01/12/2022	1	<b>4 .Bridge substructure and approaches</b> 4.1 Types of pier
	02/12/2022	1	4.1 Types of pier
12TH	05/12/2022	1	4.2 Types of abutment
	07/12/2022	1	4.3 Types of wing wall
	08/12/2022	1	4.4 Approaches
	09/12/2022	1	<b>5. Culvert &amp; Cause ways</b> 5.1 Types of culvers – brief description
13TH	12/12/2022	1	5.1 Types of culvers – brief description
	14/12/2022	1	5.2 Types of causeways –brief description
	15/12/2022	1	5.2 Types of causeways –brief description
	16/12/2022	1	<b>Revision</b>
14TH	19/12/2022	1	<b>Revision</b>
	21/12/2022	1	<b>Monthly Class Test-3</b>
	22/12/2022	1	<b>Previous Year Question Discussion</b>