

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



**LESSON PLAN**

SUBJECT: RAILWAY & BRIDGE ENGINEERING (TH 3)

FACULTY: SONALIRANI PADHIARI

ACADEMIC SESSION: 2024-25

SEMESTER: 5<sup>TH</sup>

SEC: C

Sd/-  
H O D (Civil Engg.)

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

<b>Discipline: Civil Engineering</b>	<b>Semester:5<sup>th</sup> C</b>		<b>Name of the teaching faculty: SONALIRANI PADHIARI</b>
<b>Subject: Railway &amp; Bridge Engineering</b>	<b>No. of Days/ per week class allotted: 04 period per week. ( Wed – 02, Thu – 01,Sat – 01)</b>		<b>Semester From Date: 01/07/2024 To Date: 08/11/2024 No. of weeks: 18 weeks</b>
<b>Week</b>	<b>Class Day</b>	<b>No of period available</b>	<b>Theory Topics</b>
1 <sup>ST</sup>	03/07/2024	2	<b>SECTION- A</b> <b>1.Introduction</b> 1.1 Railway terminology
	04/07/2024	1	1.2 Advantages of railways
	06/07/2024	1	1.3 Classification of Indian Railways.
2 <sup>ND</sup>	10/07/2024	2	<b>2. Permanent way</b> 2.1 Definition and components of a permanent way 2.2 Concept of gauge, different gauges prevalent in India and suitability of these gauges under different Conditions
	11/07/2024	1	<b>3. Track materials</b> 3.1 Rails 3.1.1 Function and requirement of rails
	13/07/2024	1	3.1.2 Types of rail sections, length of rails.
3 <sup>RD</sup>	18/07/2024	1	3.1.3 Rail joints – types, requirement of an ideal joint.
	20/07/2024	1	3.1.4 Purpose of welding of rails & its advantage
4 <sup>TH</sup>	24/07/2024	2	3.1.5 Creep- definition, cause and prevention 3.2 Sleepers 3.2.2 Classification of sleepers
	25/07/2024	1	3.2.3 Advantages & disadvantages of different types of sleeper
	27/07/2024	1	3.3 Ballast 3.3.1 Functions & requirements of ballast
5 <sup>TH</sup>	31/07/2024	2	3.3.2 Materials for ballast

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

			3.4 Fixtures for Broad gauge
	01/08/2024	1	3.4.1 Connection of rails to rail-fishplate, fish bolts
	03/08/2024	1	3.4.2 Connection of rails to sleepers
6 <sup>TH</sup>	07/08/2024	2	<b>4.Geometric for broad gauge</b> 4.1 Typical cross sections of single & double broad gauge railway track in cutting and embankment 4.2 Permanent & temporary land width
	08/08/2024	1	4.3 Gradients for drainage 4.4 Super elevation –necessity & limiting valued.
	10/08/2024	1	Problems on super elevation
7 <sup>TH</sup>	14/08/2024	2	<b>5 .Points and crossings</b> 5.1 Definition, necessity of Points and crossings
	17/08/2024	1	5.2 Types of points & crossings with tie diagrams
8 <sup>TH</sup>	21/08/2024	2	<b>6. Laying &amp; maintenance of track</b> 6.1 Methods of Laying and Maintenance of track
	22/08/2024	1	6.2 Duties of a permanent way inspector
	24/08/2024	1	<b>Monthly Class Test-1</b>
9 <sup>TH</sup>	28/08/2024	2	<b>Section – B: BRIDGES</b> <b>1 Introduction to bridges</b> 1.1 Definitions 1.2 Components of a bridge
	29/08/2024	1	1.3 Classification of bridges 1.4 Requirements of an ideal bridge
	31/08/2024	1	<b>2. Bridge site investigation, hydrology &amp; planning</b> 2.1 Selection of bridge site, Alignment
10 <sup>TH</sup>	04/09/2024	2	2.2 Determination of Flood Discharge
	05/09/2024	1	2.3 Waterway & economic span
11 <sup>TH</sup>	11/09/2024	2	2.4 Afflux, clearance & free board <b>3. Bridge foundation</b> 3.1 Scour depth minimum depth of foundation

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

	12/09/2024	1	<b>INTERNAL ASSESSMENT</b>
	14/09/2024	1	3.2 Types of bridge foundations – 3.2.1 spread foundation, pile foundation
12TH	18/09/2024	2	3.2.2 Well foundation – sinking of wells
	19/09/2024	1	3.2.3 caisson foundation
	21/09/2024	1	3.3 Cofferdams
13TH	25/09/2024	2	<b>4 .Bridge substructure and approaches</b> 4.1 Types of pier
	26/09/2024	1	4.2 Types of abutment
	28/09/2024	1	4.3 Types of wing wall
14TH	03/10/2024	1	4.4 Approaches
	05/10/2024	1	<b>Monthly Class Test-2</b>
15TH	17/10/2024	1	<b>5. Culvert &amp; Cause ways</b> 5.1 Types of culvers – brief description
	19/10/2024	1	5.1 Types of culvers – brief description
16TH	23/10/2024	2	5.2 Types of causeways –brief description
	24/10/2024	1	5.2 Types of causeways –brief description
	26/10/2024	1	5.2 Types of causeways –brief description
17TH	30/10/2024	2	<b>Revision</b>
	02/11/2024	1	<b>Revision</b>
18TH	06/11/2024	2	<b>Previous Year Question Discussion</b>
	07/11/2024	1	<b>Previous Year Question Discussion</b>