

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



**LESSON PLAN**

SUBJECT: RAILWAY & BRIDGE ENGINEERING (TH 3)

FACULTY: SHRADHANJALI MOHAPATRA

ACADEMIC SESSION: 2024-25

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> C</b>		<b>Name of the teaching faculty:</b> SHRADHANJALI MOHAPATRA
<b>Subject:</b> <b>Railway &amp; Bridge Engineering</b>	<b>No. of Days/ per week class allotted: 04 period per week.</b> <b>( MON – 02, FRI – 01,SAT – 01)</b>		<b>Semester From Date: 01/07/2024 To Date:</b> <b>08/11/2024</b> <b>No. of weeks: 18 weeks</b>
<b>Week</b>	<b>Class Day</b>	<b>No of period available</b>	<b>Theory Topics</b>
1ST	01/07/2024	2	<b>SECTION- A</b> <b>1.Introduction</b> 1.1 Railway terminology
	05/07/2024	1	1.2 Advantages of railways
	06/07/2024	1	1.3 Classification of Indian Railways.
2ND	12/07/2024	1	<b>2. Permanent way</b> 2.1Definition and components of a permanent way 2.2 Concept of gauge, different gauges prevalent in India and suitability of these gauges under different Conditions
	13/07/2024	1	<b>3. Track materials</b> 3.1 Rails 3.1.1 Function and requirement of rails
3RD	15/07/2024	2	3.1.2 Types of rail sections, length of rails
	19/07/2024	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
4TH	22/07/2024	2	3.1.5 Creep- definition, cause and prevention
	26/07/2024	1	3.2 Sleepers 3.2.2 Classification of sleepers
	27/07/2024	1	3.2.3 Advantages & disadvantages of different types of sleeper 3.3 Ballast

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			3.3.1 Functions & requirements of ballast
5TH	29/07/2024	2	3.3.2 Materials for ballast 3.4 Fixtures for Broad gauge
	02/08/2024	1	3.4.1 Connection of rails to rail-fishplate, fish bolts
	03/08/2024	1	3.4.2 Connection of rails to sleepers
6TH	05/08/2024	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
	09/08/2024	1	4.3 Gradients for drainage 4.4 Super elevation –necessity & limiting valued.
	10/08/2024	1	Problems on super elevation
7TH	12/08/2024	2	<b>5 .Points and crossings</b> 5.1 Definition, necessity of Points and crossings
	16/08/2024	1	5.2 Types of points & crossings with tie diagrams
	17/08/2024	1	<b>6. Laying &amp; maintenance of track</b> 6.1 Methods of Laying and Maintenance of track
8TH	23/08/2024	1	6.2 Duties of a permanent way inspector
	24/08/2024	1	<b>Monthly Class Test-1</b>
9TH	30/08/2024	1	<b>Section – B: BRIDGES</b> <b>1 Introduction to bridges</b> 1.1 Definitions 1.2 Components of a bridge
	31/08/2024	1	1.3 Classification of bridges 1.4 Requirements of an ideal bridge <b>2.Bridge site investigation, hydrology &amp; planning</b> 2.1 Selection of bridge site, Alignment
10TH	02/09/2024	2	2.2 Determination of Flood Discharge
	06/09/2024	1	2.3 Waterway & economic span

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11TH	09/09/2024	2	2.4 Afflux, clearance & free board <b>3. Bridge foundation</b> 3.1 Scour depth minimum depth of foundation
	13/09/2024	1	<b>INTERNAL ASSESSMENT</b>
	14/09/2024	1	3.2 Types of bridge foundations – 3.2.1 spread foundation, pile foundation
12TH	16/09/2024	2	3.2.2 Well foundation – sinking of wells
	20/09/2024	1	3.2.3 caisson foundation
	21/09/2024	1	3.3 Cofferdams
13TH	23/09/2024	2	<b>4 .Bridge substructure and approaches</b> 4.1 Types of pier
	27/09/2024	1	4.2 Types of abutment
	28/09/2024	1	4.3 Types of wing wall
14TH	30/09/2024	2	4.4 Approaches
	04/10/2024	1	4.3 Types of wing wall
	05/10/2024	1	4.4 Approaches
15TH	14/10/2024	2	<b>Monthly Class Test-2</b>
	18/10/2024	1	5. Culvert & Cause ways 5.1 Types of culvers – brief description
	19/10/2024	1	5.1 Types of culvers – brief description
16TH	21/10/2024	2	5.2 Types of causeways –brief description
	25/10/2024	1	5.2 Types of causeways –brief description
	26/10/2024	1	5.2 Types of causeways –brief description
17TH	28/10/2024	2	<b>Revision</b>
	02/11/2024	1	<b>Revision</b>
18TH	04/11/2024	2	<b>Previous Year Question Discussion</b>

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	08/11/2024	1	<b>Previous Year Question Discussion</b>
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