



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: Th-3 (RAILWAY & BRIDGE ENGINEERING)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Introduction	2	4
2	Permanent way	5	4
3	Track materials	10	12
4	Geometric for broad gauge	10	5
5	Points and crossings	4	3
6	Laying & maintenance of track	4	4
Section - B: BRIDGES			
1	Introduction to bridges	2	4
2	Bridge site investigation, hydrology & planning	5	8
3	Bridge foundation	8	7
4	Bridge substructure and approaches	5	5
5	Culvert & Cause Ways	5	4

	Total Period:	60	60
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Discipline: CIVIL ENGINEERING	Semester: 5 th	Name of the Teaching Faculty: Er. Sitikantha Barik
Week	Class Day	Theory / Practical Topics
1st	1st	1.1 Railway terminology
	2nd	1.2 Advantages of railways
	3rd	1.3 Classification of Indian Railways
	4th	1.4 Discussion & revision of previous classes
2nd	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	2.1 Solving of problems on permanent way
3rd	1st	3.1 Rails 3.1.1 Functions and requirement of rails 3.1.2 Types of rail sections, length of rails
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	3rd	3.1.3 Rail joints – types, requirement of an ideal joint 3.1.4 Purpose of welding of rails & its advantages 3.1.5 Creep- definition, cause & prevention

	4th	3.1.3 Rail joints – types, requirement of an ideal joint 3.1.4 Purpose of welding of rails & its advantages 3.1.5 Creep- definition, cause & prevention
4th	1st	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers 3.2.2 Classification of sleepers
	2nd	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers 3.2.2 Classification of sleepers
	3rd	3.2.2 Classification of sleepers 3.2.3 Advantages & disadvantages of different types of sleepers
	4th	3.3 Ballast 3.3.1 Functions & requirements of ballast 3.3.2 Materials for ballast
5th	1st	3.3 Ballast 3.3.1 Functions & requirements of ballast 3.3.2 Materials for ballast
	2nd	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers
	3rd	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers
	4th	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers
6th	1st	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment
	2nd	4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment

	3rd	4.2 Permanent & temporary land width
	4th	4.3 Gradients for drainage 4.4 Super elevation – necessity & limiting valued
7th	1st	4.3 Gradients for drainage 4.4 Super elevation – necessity & limiting valued
	2nd	5.1 Definition, necessity of Points and crossings
	3rd	5.2 Types of points & crossings with tie diagrams
	4th	5.2 Types of points & crossings with tie diagrams
8th	1st	6.1 Methods of Laying & maintenance of track
8th	2nd	6.1 Methods of Laying & maintenance of track
	3rd	6.1 Methods of Laying & maintenance of track
	4th	6.2 Duties of a permanent way inspector
9th	1st	7 .1 Definitions of bridge 7.2 Various Components of a bridge
	2nd	7.1 Definitions of bridge 7.2 Various Components of a bridge
	3rd	7.3 Classification of bridges 7.4 Requirements of an ideal bridge
	4th	7.3 Classification of bridges 7.4 Requirements of an ideal bridge
10th	1st	8.1Selection of bridge site, Alignment, 8.2 Determination of Flood Discharge
	2nd	8.1Selection of bridge site, Alignment, 8.2 Determination of Flood Discharge
	3rd	8.1Selection of bridge site, Alignment, 8.2 Determination of Flood Discharge

	4th	8.1 Selection of bridge site, Alignment, 8.2 Determination of Flood Discharge
11th	1st	8.3 Waterway & economic span 8.4 Afflux, clearance & free board
	2nd	8.3 Waterway & economic span 8.4 Afflux, clearance & free board
	3rd	8.3 Waterway & economic span 8.4 Afflux, clearance & free board
	4th	8.3 Waterway & economic span 8.4 Afflux, clearance & free board
12th	1st	9.1 Scour depth minimum depth of foundation 9.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caisson foundation
	2nd	9.1 Scour depth minimum depth of foundation 9.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caisson foundation
	3rd	9.1 Scour depth minimum depth of foundation 9.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caisson foundation
	4th	9.1 Scour depth minimum depth of foundation 9.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caisson foundation
13th	1st	9.3 pile foundation- well foundation – sinking of wells, caisson foundation
	2nd	9.4 sinking of wells, caisson foundation ,Coffer dam
	3rd	9.4 sinking of wells, caisson foundation ,Coffer dam
	4th	Bridge substructure and approaches 10.1 Types of piers 10.2 Types of abutments
	1st	Bridge substructure and approaches 10.1 Types of piers 10.2 Types of abutments

14th	2nd	10.3 Types of wing walls 10.4 Approaches
	3rd	10.3 Types of wing walls 10.4 Approaches
	4th	10.3 Types of wing walls 10.4 Approaches
15th	1st	Culvert & Cause ways 11.1 Types of culvers – brief description
	2nd	Culvert & Cause ways 11.1 Types of culvers – brief description
	3rd	11.2 Types of causeways – brief description
	4th	REVISION