

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



LESSON PLAN

SUBJECT: RAILWAY & BRIDGE ENGINEERING (TH 3)

FACULTY: SRI KSHITISH KUMAR SAHOO (LECTURER)

ACCADEMIC SESSION: 2022-23

SEMESTER: 5TH

SEC: B

Sd/-
H O D (Civil Engg.)

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| Discipline: Civil Engineering | | Semester/ Section: 5 TH / B | | Name of the teaching faculty: SRI KSHITISH KUMAR SAHOO | |
|--|------------------|---|--|--|--|
| Subject: Th3. Railway & Bridge Engineering | | No. of Days/ per week class allotted: 04 period per week. (Mon, Tue, Thu, Fri) | | Semester From Date: 15-09-2022 To Date: 22-12-2022 No. of weeks: 14 | |
| Week | Class Day | No of period available | | | |
| 1ST | 15.09.2022 | 1 | 1 Introduction 1.1 Railway terminology. | | |
| | 16.09.2022 | 1 | 1.2 Advantages of railways 1.3 Classification of Indian Railways. | | |
| 2ND | 19.09.2022 | 1 | 2 Permanent way 2.1 Definition and components of a permanent way. | | |
| | 20.09.2022 | 1 | 2.2 Concept of gauge, different gauges prevalent in India. | | |
| | 22.09.2022 | 1 | 2.2 suitability of these gauges under different conditions. | | |
| | 23.09.2022 | 1 | 3 Track materials 3.1 Rails 3.1.1 Functions and requirement of rails | | |
| 3RD | 26.09.2022 | 1 | 3.1.2 Types of rail sections, length of rails. | | |
| | 27.09.2022 | 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 advantages. | | |
| | 30.09.2022 | 1 | 3.1.5 Creep- definition, cause & prevention. | | |
| 4TH | 10.10.2022 | 1 | 3.1.5 creep theories. | | |
| | 11.10.2022 | 1 | 3.1.5 creep theories. | | |
| | 13.10.2022 | 1 | 3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers | | |
| | 14.10.2022 | 1 | 3.2.2 Classification of sleepers | | |
| 5TH | 17.10.2022 | 1 | 3.2.3 Advantages & disadvantages of different types of sleepers. | | |
| | 18.10.2022 | 1 | 3.3 Ballast 3.3.1 Functions & requirements of ballast. | | |
| | 20.10.2022 | 1 | 3.3.2 Materials for ballast. | | |
| | 21.10.2022 | 1 | 3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts. | | |
| 6TH | 25.10.2022 | 1 | 3.4.2 Connection of rails to sleepers. | | |
| | 27.10.2022 | 1 | 4 Geometric for broad gauge: 4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment. | | |
| | 28.10.2022 | 1 | 4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment. | | |
| 7TH | 31.10.2022 | 1 | Class test 1 | | |
| | 01.11.2022 | 1 | 4.2 Permanent & temporary land width. | | |
| | 03.11.2022 | 1 | 4.3 Gradients for drainage. | | |

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| | 04.11.2022 | 1 | 4.4 Super elevation – necessity & limiting valued. |
| 8TH | 07.11.2022 | 1 | 5 Points and crossings 5.1 Definition, necessity of Points and crossings. |
| | 10.11.2022 | 1 | 5.2 Types of points & crossings with tie diagrams. |
| | 11.11.2022 | 1 | 6 Laying & maintenance of track 6.1 Methods of Laying & maintenance of track. |
| | 14.11.2022 | 1 | 6.2 Duties of a permanent way inspector. |
| 9TH | 15.11.2022 | 1 | IA |
| | 17.11.2022 | 1 | 1 Introduction to bridges 1.1 Definitions 1.2 Components of a bridge. |
| | 18.11.2022 | 1 | 1.3 Classification of bridges 1.4 Requirements of an ideal bridge. |
| | 21.11.2022 | 1 | 2 Bridge site investigation, hydrology & planning 2.1 Selection of bridge site, Alignment. |
| 10TH | 22.11.2022 | 1 | 2.2 Determination of Flood Discharge. |
| | 24.11.2022 | 1 | 2.3 Waterway & economic span. |
| | 25.11.2022 | 1 | 2.4 Afflux, clearance & free board. |
| | 28.11.2022 | 1 | 3 Bridge foundation 3.1 Scour depth minimum depth of foundation. |
| 11TH | 29.11.2022 | 1 | 3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation. |
| | 01.12.2022 | 1 | 3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation. |
| | 02.12.2022 | 1 | 3.3 Coffor dams. |
| | 05.12.2022 | 1 | 3.3 Coffor dams. |
| 12TH | 06.12.2022 | 1 | 4 Bridge substructure and approaches 4.1 Types of piers |
| | 08.12.2022 | 1 | 4.2 Types of abutments |
| | 09.12.2022 | 1 | 4.3 Types of wing walls |
| | 12.12.2022 | 1 | 4.4 Approaches |
| 13TH | 13.12.2022 | 1 | |
| | 15.12.2022 | 1 | 5 Culvert & Cause ways: 5.1 Types of culvers – brief description |
| | 16.12.2022 | 1 | 5.1 Types of culvers – brief description, 5.2 Types of causeways – brief description |
| | 19.12.2022 | 1 | 5.2 Types of causeways – brief description |
| 14TH | 20.12.2022 | 1 | Revision. |
| | 22.12.2022 | 1 | Revision. |