



**TENTATIVE TEACHING PLAN (THEORY)**

Department: **Civil Engineering**

Name of Teacher: **Prof. Dr. Agha Faisal Habib**

Subject: **Railways and Waterways Engineering** Course Code: **CE207** Batch: **22CE (A+B)** Year: **2nd** Semester: **3rd**

Semester Starting Date: **20/11/2023** Semester Suspension Date: **29/03/2024**


**Course Learning Outcomes (CLOs):**

Upon successful completion of the course, the student will be able to:

CLO No.	Description	Taxonomy Level	Linking to PLOs
1	DISCUSS concepts of transportation systems and its planning in solving urban transportation problems.	C2	1
2	APPLY the principles of transportation engineering to solve the problems that are most likely to be encountered in the planning and design of railways and coastal structures based on best practices and guidelines.	C3	3

S #	Topic	CLO's	No: of lec. hrs reqrd
1.	Introduction to Transportation Systems and Planning	1	01
2.	Different Modes of Transport	1	01
3.	Comparison of Different Modes of Transport	1	01
4.	Nature of Transportation Engineering	1	01
5.	Different Policies of Transportation Management	1	03
6.	Planning process and mode choice decisions	1	02
7.	Transportation Models	1	02
8.	Overview of Mass Transit Planning	1	03
9.	Railway Engineering	2	01
10.	Elements of Railway Track	2	01
11.	Types of Gauges in Railway Track	2	01
12.	Railway Track Cross-section	2	01
13.	Coning of Wheels	2	01
14.	Introduction of Rails	2	01
15.	Requirements of Rails	2	01
16.	Different types of Rails with their merits and demerits	2	01
17.	Damaged Rails	2	01
18.	Rail Failures	2	01
19.	Wear on Rails	2	01
20.	Creep of Rails	2	01
21.	Rail Joints and Welding of Rails	2	01
22.	Sleepers and their functions	2	01
23.	Different types of Sleepers	2	01
24.	Spacing of Sleepers and Sleeper density	2	01
25.	Track Fittings and Fastenings	2	01
26.	Ballast, types, requirements and renewal of ballast	2	01
27.	Formation of single and double track	2	01
28.	Points and Crossings	2	01
29.	Stations and Yards	2	01
30.	Signalization, navigation and interlocking	2	01
31.	Track Maintenance	2	01
32.	Modernization of Railway Track and Future Trends	2	01

33.	Coastal Engineering	2	01
34.	Classification of Harbors	2	02
35.	Design principles and requirements of Harbor	2	02
36.	Wharves, jetties and Breakwaters	2	02
37.	Channel regulation and demarcation	2	01
38.	Classification of docks and their construction	2	02
<b>Total Lecture Hrs</b>			<b>48</b>

Signature of Teacher: 

Dated: 12/11/2023

Remarks of DMRC: **APPROVED**

Signature of Chairman: 

Dated: 12/12/2023