

Branch Name:	Transportation Engineering
ProgramCode:	ET211
CourseName:	Rail Transportation System Planning and Design
CourseCode:	2ET2110206T
Pre-requisiteCourse:	Railway Engineering

Course Objective:

1. To introduce the various aspects of planning and design of Rail Transportation Systems.
2. To provide techniques of planning, modeling and designing the transportation systems along with infrastructures required for Railways.
3. To enhance the knowledge of Railway Engineering in the context of regional mass transportation systems.

Credit	Teaching Scheme				Evaluation Scheme (Marks)								
	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
5	3	2	-	5	24	60	16	40	-	-	-	-	100

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Rail Transportation System: Railway Track system & sub-structures, Railway infrastructure, Modernization in track, safety in railways, under-ground railways	5	20
2	Demand analysis and forecasting for passenger and freight traffic costing and pricing principles, project analysis and design	10	20
3	Project interdependencies and programming techniques	10	20
4	Rail systems analysis and systems planning; macroeconomic transportation simulator	10	20
5	Case studies and implementation strategies: Metro / Mono Rail/ Bullet / Hyperloop	10	20

Reference Books:

1. Saxena S.C., Railway Engineering, Dhanpat Rai & Sons, 1995

List of Experiments:

1. Planning and design of railway network, routes and schedules for the actual or hypothetical regional area development.
2. Planning and design of infrastructures required for railways.

Open Ended Problems:

A case study of any Gauge Conversion project

Crouse Learning Outcome:

1. Know the functioning of railway industry, their financing and competition with other modes.
2. Insight on safety, scheduling and reliability aspects with rail transport.
3. Freight transport management and maintenance.
4. Knowledge on various structures and facilities provided and planning.

Tutorials:

1. Problems based on forecasting of passenger and freight traffic for railways.
2. Problems based on costing and pricing strategy in railways
3. Planning and design of railway network, routes and schedules for the actual or hypothetical regional area development.
4. Planning and design of infrastructures required for railways.

Field Visit:

1. Visit to the Railway station, yards and management office.

Course Learning Outcomes (CLO):

After successful completion of the course the students shall be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Know the functioning of railway industry, their financing and competition with other modes.	L-2,L-3, L-4, L-5
CLO2	Insight on safety, scheduling and reliability aspects with rail transport.	L-2, L-3, L-4, L-5, L-6
CLO3	Freight transport management and maintenance.	L-1, L-2, L-3
CLO4	Knowledge on various structures and facilities provided and planning.	L-3, L-4, L-5

L1- Remember, L2- Understand, L3- Apply, L4- Analyze, L5- Evaluate, L6- Create

Mapping of CLOs with Pos & PSOs

	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
Course Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	M	M	H	L	M	H						M	M	M	M
CLO2	M	H	H	M	L	M						M	M	M	H
CLO3	H	M	H	M	L	M	M					M	L	M	M
CLO4	M	M	H	L	M	H						M	M	M	M

H: High, M: Medium, L: Low