

22CEPE28	RAILWAY ENGINEERING	Semester			VII	
PREREQUISITES		Category	PE	Credit		3
Surveying and Transportation Engineering		Hours/Week	L	T	P	TH
			3	0	0	3
<b>Course Learning Objectives</b>						
1	To introduce the students about Railways planning					
2	To know about the basics and design of various components of railway Engineering					
3	To study about the types and functions of track, junctions and railway stations.					
4	To understand about construction procedure for railways					
5	To impart knowledge about metro, mono and seaport					
<b>Unit I</b>	<b>RAILWAY PLANNING AND ALIGNMENT</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
Elements of permanent way – Rails, Sleepers, Ballast, rail fixtures and fastenings, Selection of gauges, Track Stress, coning of wheels, creep in rails, defects in rails – Route alignment surveys, conventional and modern methods						
<b>Unit II</b>	<b>CURVATURE OF TRACK</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
Designation of curve – Types of curves and degree of curve –Transition curve –Geometric design of railway gradient, super elevation, widening of gauge on curves- Level Crossings.						
<b>Unit III</b>	<b>RAILWAY CONSTRUCTION AND MAINTENANCE</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
Earthwork – Stabilization of track on poor soil – Track drainage – Calculation of Materials required for track laying – Construction and maintenance of tracks						
<b>Unit IV</b>	<b>RAILWAY OPERATION AND CONTROL</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
Points and crossings and their design – Track junctions – simple track layouts – Railway Station and yards and passenger amenities-Signaling and interlocking – Train movement control systems						
<b>Unit V</b>	<b>URBAN INFRASTRUCTURE FOR METRO</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
Infrastructure for Metro-Introduction to metros, Planning of Metros, Alignment/ Span configuration and overview of superstructure construction, Mono and underground railways.						
						<b>Total= 45 Periods</b>

<b>Text Books:</b>	
1	A Text Book Of Railway Engineering   S. C. Saxena S. P. Arora   Dhanpat Rai Publications
2	Railway Engineering By Rangwala 2017,27 <sup>th</sup> Edition
3	Railway Track Engineering By J S Mundrey Fifth Edition 2017
<b>Reference Books:</b>	
1	Satish Chandra And M. M. Agarwal's Railway Engineering – Second Edition, Published By Oxford University Press 2013
2	Railway Planning, Management, And Engineering 5 <sup>th</sup> Edition By <a href="#">V.Profillidis</a>
3	Railway Transport Planning And Management – Stefano De Luca June 22 ,2022
4	Modern Railway Engineering By Ali G.Hessami March 27 <sup>th</sup> 2017

<b>Course Outcomes:</b> Upon completion of this course, the students will be able to:		<b>Bloom's Taxonomy Mapped</b>
<b>CO1</b>	Carry out the surveys for railways	Apply
<b>CO2</b>	Understand the design elements in Railway Constructions	Understand
<b>CO3</b>	Understand the Construction techniques and Maintenance of Track laying and Railway stations.	Understand
<b>CO4</b>	Implement the railway operation	Apply
<b>CO5</b>	Apply the construction of metro infrastructure	Apply

**COURSE ARTICULATION MATRIX**

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	3	3	2	-	2	-	-	1	-	-	-	-	2	-	2
<b>CO2</b>	3	3	3	-	3	-	-	1	-	-	-	-	1	-	3
<b>CO3</b>	-	-	-	2	3	1	-	-	-	-	-	2	1	-	1
<b>CO4</b>	1	1	-	-	2	-	-	-	-	-	-	2	1	-	3
<b>CO5</b>	-	-	-	2	2	2	-	2	-	-	-	2	2	-	3
<b>Avg</b>	<b>2.3</b>	<b>2.3</b>	<b>2.7</b>	<b>2</b>	<b>2.4</b>	<b>1.5</b>	<b>-</b>	<b>1.3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>1.4</b>	<b>-</b>	<b>2.4</b>
<b>3/2/1 – indicates strength of correlation (3- High, 2- Medium, 1- Low)</b>															