



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF CIVIL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
20CE6E03	Railway and Airport Engineering	VI	CIVIL	5	2024-25	18.11.2024
COURSE OUTCOMES						
1	Students can able to know different components of Permanent way.					
2	Student can able to design the components of Permanent way.					
3	Students can know about points and crossings, controllers and turnouts.					
4	Student can able to design the Runway and Taxiway.					
5	Students can know about planning, layout and construction of harbours and docks.					
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	Students can able to know different components of Permanent way.	1.0	Permanent way components- Railway track gauge-cross section of permanent way	T1,T4	01	Black board and PPT
		1.1	Rails, sleepers and Ballast, Functions and Types	T1,T4	02	Black board and PPT
		1.2	Rail fastenings and their functions	T1,T4	02	Black board and PPT
		1.3	Creep of rails-Theories related to creep.	T1,T4	01	Black board and PPT
		1.4	Adzing of sleepers-Sleeper density-Rail joints	T1,T4	01	Black board and PPT
Content beyond Syllabus (if needed)			Defects in Rail joints	R1	01	Black board and PPT
Total					08	
II	Student can able to design the components of Permanent way.	2.1	Alignment- Engineering surveys for Alignment	T1,T4	01	Black board and PPT
		2.2	Gradients-Grade compensation curves	T1,T4	01	Black board and PPT
		2.3	Negative super elevation-Cant deficiency	T1,T4	01	Black board and PPT
		2.4	Degree of curve-	T1,T4	02	Black board



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		2.5	Safe speed on curves	T1,T4	02	and PPT Black board and PPT
		2.6	Problems on Degree of curve and safe speed	T1,T4	02	Black board
		2.7	Compound and Transition curves	T1,T4	02	Black board and PPT
		2.8	Problems on Compound and Transition curves	T1,T4	02	Black board
		2.8	Reverse curves-Extra clearance on curves	T1,T4	02	Black board and PPT
		2.9	Widening of gauge on curves	T1,T4	02	Black board and PPT
		Content beyond Syllabus (if needed)				
III	Students can know about points and crossings, controllers and turnouts.			Total	17	
		3.1	Track layouts-Switches	T1,T4	01	Black board and PPT
		3.2	Design of tongue rails	T1,T4	01	Black board and PPT
		3.3	Crossings-Turnouts-Layout of turnouts	T1,T4	02	Black board and PPT
		3.4	Double turnout –Diamond crossing	T1,T4	02	Black board and PPT
		3.5	Scissor crossing	T1,T4	01	
		3.6	Signals-objectives Classification	T1,T4	01	Black board and PPT
		3.7	Fixed signals-stop signals	T1,T4	02	Black board and PPT
		3.8	Mechanical signaling system and Electrical signaling system	T1,T4	02	Black board and PPT
		3.9	Systems for controlling train movement	T1,T4	02	Black board and PPT
		3.10	Interlocking-Modern methods.	T1,T4	02	Black board and PPT
Content beyond Syllabus (if needed)				Total	16	
		Track Maintenance- New Trends				
		4.1	AIRPORT PLANNING AND DESIGN Airport master plan-Airport site selection	T3, T4	01	Black board and PPT
		4.2	Aircraft characteristics- zoning laws	T3, T4	01	Black board and PPT
		4.3	Airport classification-	T3, T4	02	Black board



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IV	Student can able to design the Runway and Taxiway		Runway orientation			and PPT
		4.4	Wind rose diagram	T3, T4	02	Black board and PPT
		4.5	Runway length	T3, T4	01	Black board and PPT
		4.6	Taxiway deign	T3, T4	01	Black board and PPT
		4.7	Terminal area and airport layout	T3, T4	02	Black board and PPT
		4.8	Visual aids and air traffic control	T3, T4	02	Black board and PPT
		4.9	RUNWAY DESIGN Various design factors	T3, T4	01	Black board and PPT
		4.10	LCN system of pavement design	T3, T4	01	Black board and PPT
		4.11	Airfield pavement failures	T3, T4	01	Black board and PPT
		4.12	Maintenance and rehabilitation of airfield pavements	T3, T4	01	Black board and PPT
		4.13	Evaluation and strengthening of Airfield pavements	T3, T4	01	Black board and PPT
		4.14	Airport drainage-Design of surface and subsurface drainage	T3, T4	01	Black board and PPT
Content beyond Syllabus (if needed)						
Total				18		
V	Students can know about planning, layout and construction of harbours and docks.	5.1	PLANNING,LAYOUT, CONSTRUCTION AND MAINTENANCE OF DOCKS AND HARBOURS Classification of ports	T3, T4	01	Black board and PPT
		5.2	Requirements of a good port- Classification of Harbours	T3, T4	02	Black board and PPT
		5.3	Docks-dry and wet docks	T3, T4	01	Black board and PPT
		5.4	Transition sheds and ware houses-Layouts	T3, T4	01	Black board and PPT
		5.5	Quays-construction of quay walls	T3, T4	01	Black board and PPT
		5.6	Wharves-jetties-Tides-Tidal data analysis	T3, T4	02	Black board and PPT



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	5.7	Breakwaters	T3, T4	01	Black board and PPT
	5.8	Dredging-Maintenance of ports and harbours	T3, T4	01	Black board and PPT
	5.9	Navigational aids	T3, T4	01	Black board and PPT
Content beyond Syllabus (if needed)		Case Study: Sagaramala Project			
Total				11	
CUMULATIVE PROPOSED PERIODS				70	
Text Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	Satish Chandra and Agarwal M.M, Railway Engineering, Oxford university press				
2	Khanna and Arora, Airport Engineering, Nemchand bros				
3	Bindra S.P. Docks and Harbour Engineering, Dhanpathi rai and sons				
4	R.Srinivasa kumar Transportation Engineering, University press				
Reference Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	Saxena and Arora, Railway Engineering, Dhanpatirai				
2	Wright P.H & N.J Transportation Engineering planning design- John wiley & Sons				
3	Virendrakumar, Airport Engineering, Dhanpatrai publishers- New Delhi				
4	KP Subrahmanyam, Highway, Railway, Airport and Harbour Engineering. Scitech.				
Web Details					
1	https://nptel.ac.in/courses/105107123				
2	https://www.civilsutras.com/nptel-lectures-on-transportation-engineering-ii/				

	Name	Signature with Date
i. Faculty	G V L N Murthy	
ii. Course Coordinator	G V L N Murthy	
iii. Module Coordinator	G V L N Murthy	
iv. Programme Coordinator	G V L N Murthy	


Principal