 <p>NAGARJUNA COLLEGE OF ENGINEERING & TECHNOLOGY</p>	<p>NBA Accredited *</p> <p>NACC Accredited with “A” grade (An ISO 9001 – 2008 Certified Institution)</p> <p>Affiliated to Visvesvaraya Technological University (VTU)</p> <p>Recognized by Govt. of Karnataka & Approved by A.I.C.T.E. New Delhi</p>
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COURSE HANDOUT

Course No. : 18CVT531	Dept.: Civil Engineering
Course Title : Railways, Harbor, Airport and Tunnel Engineering	Semester: 5th
Instructor-in-charge : Mr.Mandeep B V	Academic Year: 2020-21
Lab. Instructor :	

Subject Description

This course serves as a source of useful information in the area of transportation modes like Railways and its components and Airport layout and its components and Harbours and docks with its components and construction of tunnels.

Text Books:

T1: S.C. Saxena and S.P Arora: “Railway Engineering”, (Chapters 1-11, 15), 7th Edition, v Dhanpat Rai Publications, New Delhi, ISBN: 9788189928834.

T2: S.K Khanna, M.G Arora, S.S Jain - Airport Planning and Design, (Chapters 1,3,5-8), 6th Edition, Nem Chand Bros - Roorkee, ISBN: 81-85240-68-10.

T3: R. Srinivasan: “Harbour, Dock and Tunnel Engineering”, (Chapters 1-3), Charotar Publishing House, 28th Edition, 2016, ISBN: 9789385039195.


Reference Books:

R1: J S Mundery: “Railway Track Engineering”, (Chapters 1-5), Tata McGraw-Hill Education, 4th Edition, 2009.

R2: Hasmukh P. Oza, Gautam H. Oza “Dock and Harbour Engineering”, (Chapters 8-12,17,21), 7th Edition, Charotar Publishing house Pvt. Ltd., Gujarat, India, ISBN: 9789380358789.

PREREQUISITES


<p>1. Civil Engineering Foundation.</p> <p>2. Transportation Engineering</p> <p><i>A good understanding of the above topics is essential</i></p>	<p>Self study/ Online/ Outsourced</p>	<p>Referral Document</p> <ol style="list-style-type: none"> http://nptel.ac.in/courses/105104098/45 https://www.youtube.com/watch?v=qbO7ZMfCDWI S.K. Khanna, Dr. C.E.G Justo, Dr. A. Veeraragavan: “Highway Engineering”, 	<p>Remarks</p>
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LECTURE PLAN

Topic	Topic Details	Number of Lectures	Cumulative lecture hrs.	Unit/ Chapter Reference
Overview	Introduction to entire module..	1	1	
Module 1 Railway Engineering	Advantages of railways ,cross section	1	2	T1: Page No 3.1-3.13, 6.1-6.4, 9.1-9.21, 10.1-10.14, 11.1-11.9
	Gauges & types of gauges	1	3	
	Coning of wheels	1	4	
	Permanent way and its components	1	5	
	Rails, Sleepers ,Ballast and fixtures- Functions ,types & requirements	2	7	
	Fittings -types, requirements & functions	1	8	
	Permanent way and its components	1	9	
Calculation of quantity of materials required for laying track -Examples	1	10		
Revision	Brief discussion about entire module with important questions.	1	11	
Module 2 Traction and Tractive resistance Geometric Design of Railways	Traction and Tractive resistance	1	12	T1: Page No. 49-68&72-89 T2: Page No.100- 129
	Gradient ,Super elevation	1	13	
	Cant deficiency-Negative super elevation	1	14	
	Points and crossings ,Salient features of Metro transport	1	15	
	Necessity ,Safe speed on curves	1	16	
	Cant-cant deficiency, Negative cant	1	17	
	Transition curve ,Gradient and types	1	18	
	Grade compensation ,Example on above	2	20	
Revision	Brief discussion about entire module with important questions.	1	21	
Assignment	Referring Journal Papers.			
Module 3 Airport Engineering	Features and role of Air ways in transportation	1	22	T2: Page No 73-243
	Aircraft characteristics	1	23	
	Air transportation planning, wind rose diagram.	2	25	
	Site selection for airport	1	26	
	Airport components and diagram	1	27	

*CV, ME, ECE & ISE departments were accredited by NBA for 3 years

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	Basic length and corrected length of runway.	1	28	
	Taxiway-turning radius	1	29	
	Exit way, design factors and elements	1	30	
Revision	Brief discussion about entire module with important questions.	1	31	
Module 4 Tunnel Engineering	Advantages and Disadvantages, Different types of tunnels	1	32	T3: Page No 231-304
	Surveying-Transferring centerline & gradient from surface to inside the tunnel working face	2	34	
	Tunneling in rocks-Drift method	1	35	
	Heading and benching method	1	36	
	Tunneling methods in soils-Needle beam method	1	37	
	Linear plate method	1	38	
	Tunnel lining ,Tunnel ventilation	1	39	
	Pilot tunneling	1	40	
Revision	Brief discussion about entire module with important questions.	1	41	
Assignment	Online Quiz			
Module 5 Harbours and Docks	Types, Components	1	42	T3: Page No 1-210
	Natural phenomenon affecting the design of harbors	1	43	
	Wind ,wave & tides	1	44	
	Currents & Breakwaters - types	1	45	
	Wharf & quays ,Jetties and piers	1	46	
	Spillways.	1	47	
	Dry dock and wet docks, Spillways	1	48	
	Navigational aids, warehouse and transit-shed	1	49	
Revision	Brief discussion about entire module with important questions.	1	50	
Future scope of learning	Airport and Tunnel construction, Railway track construction and maintenance.			

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Evaluation Scheme:

Component	Duration	Weightage	Date (Time)
CIE 1	90 min	40%	30-SEP-2020
CIE 2	90 min	40%	09-NOV-2020
AIT 1	2 days	5%	25-SEP-2020
AIT 2	2 days	5%	05-NOV-2020
Make up CIE	90 min	40%	27-NOV-2020
SEE	180 min	50%	11/12/2020
Make up SEE	180 min	50%	14/01/2021
Total		100%	

Mandeep B V
Course-in-charge