Appendix - C

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of civil Engineering

Academic Year: **2016-17** Semester**: EVEN**

COURSE PLAN

Semester: **VI** Subject Code& Name: **10CV63 & TRANSPORTATION ENGINEERING II**

Name of Subject Teacher: **ASIF**

Name of Subject Expert (Reviewer): **CHANDAN M R**

For the Period: From: 6-02-17 to 02-06-17

Details of Book to be referred:

Text Books	**T1: Railway Engineering -** Saxena and Arora, Dhanpat Rai & Sons, New Delhi **T2: Indian Railway Track –** M M Agarwal, Jaico Publications, Bombay **T3: Airport Planning and Design –** Khanna Arora and Jain, Nem Chand Bros, Roorkee **T4: Doks and Tunnel Engineering –** R Srinivasan, Charaotar Publishing House **T5: Docks and Harbour Engineering –** H P Oza and G H Oza Charaotar Publishing House **T6: Surveying –** B C Punmia, Laxmi Publications
Reference Books	**R1: Railway Engineering –** Mundrey, McGraw Hill Publi cations

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with Pg No.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	Introduction to the subject	**Objective:** To study different Modes of Transport, gauges, various		06-02-2017				
2.	**UNIT 1** **INTRODUCTION: RAILWAY ENGINEERING** Role of railways in transportation		**T1: 1.1-1.4**	06-02-2017				

3.	Selection of Routes, Permanent way and its requirements	cross section of permanent way **Application:** Indian railways Manufacturing of rails **OUTCOME:** Students will be able to know the Indian rail organization	**T1: 3.1-3.2 & 13.2-13.4**	08-02-2017				
4.	Gauge and types, Typical cross section- single line B G track in cutting, embankment and electrified tracks		**T1: 3.4-3.5**	09-02-2017				
5.	Typical cross section- Double line B G track in cutting, embankment		**T1: 3.5**	10-02-2017				
6.	Electrified tracks, Coning of wheels and tilting of rails		**T1: 3.5-3.6**	13-02-2017				
7.	Rails-Functions-requirements		**T1: 6.1-6.4**	13-02-2017				
8.	Rails- length-defects-wear-		**T1: 6.5-6.14**	15-02-2017				
9.	Creep-welding-joints, creep of rails		**T1: 7.1-8.7**	16-02-2017				
10.	Unit Test			17-02-2017				
11.	**UNIT 2** **SLEEPERS AND BALLAST** Functions, Requirements, Types	**Objective:** To study the different types of sleepers and ballast with their functional requirement and calculation of material for a unit length of track **Application:** Track fittings and fastening Hauling capacity of a track **OUTCOME:** Students will be able to calculate material	**T1: 9.1-9.7**	20-02-2017				
12.	Ballast: Function & requirement ,Types of ballast , size & selection		**T1: 11.1-11.2**	20-02-2017				
13.	Track fitting and fasteners- Dog spike Screw spike		**T1: 10.1-10.3**	22-02-2017				
14.	Pandrol clip Fish plates, Bearing plates		**T1: 10.3-10.7 & 10.2**	23-02-2017				
15.	Calculation of quantity of materials required for laying a track- examples		**T1: 22.4**	27-02-2017				
16.	Tractive resistance and hauling capacity with examples		**T1: 5.1-5.3**	27-02-2017				

17.	Unit Test	for a unit length of track		01-03-2017				
18.	**UNIT 3** **GEOMETRIC DESIGN** Necessity, Gradient	**Objective:** To study the various geometrical aspects of a ideal railway track. To study safe speed on various criteria **Application:** Transition curves Grade compensation **OUTCOME:** Students will be able to calculate required cant and safe speed based on various criteria	**T1: 15.1**	02-03-2017				
19.	Types and Grade compensation		**T1: 15.2**	03-03-2017				
20.	Cant- Cant deficiency- negative cant		**T1: 15.5**	04-03-2017				
21.	Safe speed on curves		**T1: 15.3-15.4**	06-03-2017				
22.	Safe speed based on various criteria (cont.)		**T1: 15.3-15.4**	06-03-2017				
23.	Transition curve		**T1: 15.6-15.8**	08-03-2017				
24.	Problems on Cant deficiency		**T1: 15.5**	13-03-2017				
25.	Unit Test			13-03-2017				
26.	**UNIT 5** **INTRODUCTION: AIRPORT ENGINEERING** Layout of an airport with component parts and functions	**Objective:** To study the various factors for the selection of an ideal airport and aircraft characteristics **Application:** Regional planning, Federal Aviation Administration **OUTCOME:** Students will be able to solve wind rose problems	**T3:Pg 374-395**	15-03-2017				
27.	Site selection for airport, Airport classification		**T3:Pg 129-149**	16-03-2017				
28.	Aircraft characteristic affecting the design and planning of airport		**T3:Pg 109-119**	17-03-2017				
29.	Runway orientation using wind rose		**T3:Pg 164-173**	20-03-2017				
30.	Problems on wind rose		**T3:Pg 170-172**	20-03-2017				
31.	Problems on wind rose		**T3:Pg 166-168**	22-03-2017				
32.	Unit Test			23-03-2017				
33.	**UNIT 7** **TUNNELS**	**Objective:** Study of various	**T4: Pg 213-217 & 257-**	27-03-2017				

	Advantages and disadvantages, size and shape of tunnels	tunneling methods Study of tunnel ventilation	**260**					
34.	Surveying- Transferring centre line and gradient from surface to inside the tunnel working face, Weisbach triangle	**Application:** Transferring centre line and gradient from surface, Weisbach triangle	**T4: Pg 229-217**	30-03-2017				
35.	Surveying- Transferring centre line and gradient from surface to inside the tunnel working face, Weisbach triangle	**OUTCOME:** Able to understand Surveying- Transferring centre line and gradient from surface to inside the tunnel working face, Weisbach triangle	**T4: Pg 229-217**	31-03-2017				
36.	Tunneling in rocks-methods		**T4: Pg 321-333**	01-04-2017				
37.	Tunneling methods in soils- Needle beam		**T4: Pg 268-275**	03-04-2017				
38.	Liner plate, Tunnel lining,		**T4: Pg 282-285 & 364-377**	03-04-2017				
39.	Tunnel ventilation, vertical shafts		**T4: Pg 385-396**	05-04-2017				
40.	Pilot tunneling, mucking and methods, Drilling and drilling pattern		**T4: Pg 324-325 & 329-337**	06-04-2017				
41.	Unit Test			07-04-2017				
42.	**UNIT 8 HARBOURS** Harbour classification, Layout with components	**Objective:** Study of various types of harbours and docks	**T4: Pg 4-14**	10-04-2017				
43.	Natural phenomenon affecting the design of harbours- wind and wave		**T4: Pg 44-53**	10-04-2017				
44.	Tide, currents	**Application:** Location and design of the harbour.	**T4: Pg 33-44**	12-04-2017				
45.	Breakwater-Types-		**T4: Pg 60-102**	13-04-2017				
46.	Wharf and Quays, Jetties and piers	**OUTCOME:** Able to understand	**T4: Pg 152-164**	20-04-2017				

47.	Dry docks and Wet docks Slipways	various components of a harbor and a dock	**T4: Pg 114-119 & Pg 132-133**	21-04-2017				
48.	Navigational aids-warehouse		**T4: Pg 180-182**	24-04-2017				
49.	Transit-shed		**T4: Pg 176-180**	24-04-2017				
50.	Unit Test			26-04-2017				
51.	**UNIT 4 POINTS AND CROSSING** Components of a turnout, Details of points and crossings	**Objective:** Study of Components of a turnout, Details of points and crossings Study of Signaling and level crossings **Application:** Design of turnouts Track defects and maintenance **OUTCOME:** Able to understand various of track junctions- Diamond and crossover, Station and types	**T1: 16.1-16.4 & 16.6**	27-04-2017				
52.	Design of turnouts with examples		**T1: 16.7-16.8**	28-04-2017				
53.	Types of switches, crossings		**T1: 16.5-16.6**	03-05-2017				
54.	Types of track junctions-Diamond and crossover, Station and types		**T1: 17.1-17.3**	04-05-2017				
55.	Types of yards, Signaling-Objects and types		**T1: 18.8 & 20.1-20.13**	05-05-2017				
56.	station and yard equipment- Buffer stop,		**T1: 19.1-19.16**	06-05-2017				
57.	level crossing Track defects and maintenance		**T1: 18.9&24.1**	08-05-2017				
58.	Unit Test			08-05-2017				
59.	**UNIT 6 RUNWAY** Basic runway length-Corrections and examples	**Objective:** Study of Runway geometrics, Taxiway, exit way **Application:** Design of , Basic runway ,taxiway, exit taxiway	**T3: Pg 173-186**	15-05-2017				
60.	Runway geometrics, Taxiway- Factors affecting the layout		**T3: Pg 187-193 &**	15-05-2017				
61.	Geometrics of Taxiway, Design of exit taxiway		**T3: Pg 231-237& 238-242**	17-05-2017				

62.	Examples	**OUTCOME:** Able to understand various runway geometrics	**T3: Pg 237-238&242-244**	18-05-2017				
63.	Visual aids- Airport marking Visual aids- Lighting, Instrumental landing system.		**T3: Pg 406-414 T3: Pg 414-422 & 432-437**	19-05-2017				

Prepared By:_____ (Faculty) Date & Sign_____

Reviewed by:_____ (Sub. expert) Date & Sign_____

Approved by: _____ (HOD) Date & Sign _____

Approved by: _____ (Principal/ Acad. Co) Date & Sign _____