



GOVERNMENT POLYTECHNIC, BOLANGIR

DEPARTMENT OF CIVIL ENGINEERING

Discipline: CIVIL ENGG.	Semester: 5 TH	Name of the Teaching Faculty: - Sri Ankit Bhide [LECT. Stage-I, Civil Engg.]
Subject: TH:4(B)- TRAFFIC ENGINEERING	No. of days/week class allotted: 03	Total contact Hours-45Hrs Total Marks-100 Assessment: Internal Assessment -30, End term-70
COURSE OUTCOMES	<p>CO1: Analyse road traffic characteristics and factors affecting traffic movement.</p> <p>CO2: Undertake various types of road traffic studies and interpret traffic data.</p> <p>CO3: Use relevant road traffic signs, signals and pavement markings for traffic control.</p> <p>CO4: Identify suitable road intersections and traffic islands depending upon traffic flow conditions.</p> <p>CO5: Suggest preventive measures to reduce road accidents by analysing traffic conditions and apply concepts of street lighting and arboriculture.</p>	

Class Day	Main Topic	Sub-Topics	Teaching Aids / Activities	Course Outcome
1	Introduction to Traffic Engineering	Definition, objectives and scope of traffic engineering	Road photographs, discussion on traffic problems	CO1
2	Traffic Engineering Fundamentals	Importance and applications of traffic engineering	Case studies, road network maps	CO1
3	Traffic Characteristics	Speed, volume and density of traffic	Traffic flow charts, numerical examples	CO1
4	Relationship among Speed, Volume and Density	Fundamental traffic flow relationships	Graph plotting activity	CO1
5	Road User Characteristics	Physical, mental and emotional factors	Interactive discussion, case examples	CO1
6	Vehicular Characteristics	Width, length, height, weight, speed and braking	Vehicle photographs and specifications	CO1

Class Day	Main Topic	Sub-Topics	Teaching Aids / Activities	Course Outcome
		efficiency		
7	Road Characteristics	Gradient, curves, design speed and friction	Road design drawings, field photographs	CO1
8	Reaction Time	Definition and factors affecting reaction time	Demonstration activity, case study	CO1
9	PIEV Theory	Perception, Intellection, Emotion and Volition	Traffic situation analysis	CO1
10	Revision and Tutorial	Numerical and objective questions on Unit-I	Quiz and problem-solving activity	CO1
11	Traffic Volume Studies	Need and importance of traffic volume count	Traffic count sheets, field data samples	CO2
12	Traffic Volume Count Methods	Manual and automatic counting methods	Traffic survey formats	CO2
13	Analysis of Traffic Volume Data	Presentation and interpretation of traffic data	Graphs and charts	CO2
14	Origin and Destination Study	Necessity and objectives	Case studies	CO2
15	Methods of O-D Study	Roadside interview, registration number, home interview methods	Survey forms and examples	CO2
16	Speed Studies	Need and objectives of speed studies	Traffic data examples	CO2
17	Spot Speed Study	Methods and applications	Numerical examples	CO2
18	Presentation of Speed Data	Frequency distribution and cumulative curves	Graph plotting activity	CO2
19	Parking Studies	Need and objectives	Parking layout plans	CO2

Class Day	Main Topic	Sub-Topics	Teaching Aids / Activities	Course Outcome
20	Methods of Parking Study	In-out survey, licence plate method	Survey formats	CO2
21	Traffic Study Revision	Traffic volume, O-D and speed study problems	Tutorial session	CO2
22	Traffic Control Devices	Definition, necessity and classification	Traffic device photographs	CO3
23	Road Signs	Objectives and importance	Sign catalogues	CO3
24	Regulatory Signs	IRC classification and applications	Sign boards and charts	CO3
25	Warning Signs	IRC cautionary signs and placement	Road sign models	CO3
26	Informatory Signs	Types and applications	Traffic sign charts	CO3
27	Design and Erection of Road Signs	Factors to be considered	Case studies and examples	CO3
28	Traffic Markings	Definition, objectives and classification	Pavement marking photographs	CO3
29	Carriageway and Kerb Markings	Types and applications	Site photographs	CO3
30	Object Markings and Reflector Markers	Purpose and placement	Field examples	CO3
31	Traffic Signals	Definition, necessity and types	Signal photographs and videos	CO3
32	Traffic Control Signals	Fixed time, manually operated and actuated signals	Signal operation charts	CO3
33	Signal Timing Design	Fixed cycle method	Numerical examples	CO3
34	Webster and IRC	Signal time calculations	Numerical problems	CO3

Class Day	Main Topic	Sub-Topics	Teaching Aids / Activities	Course Outcome
	Methods			
35	Traffic Islands	Definition, advantages and disadvantages	Intersection photographs	CO4
36	Types of Traffic Islands	Rotary, channelizing and refuge islands	Models and diagrams	CO4
37	Road Intersections	Definition and classification	Intersection layouts	CO4
38	At-Grade Intersections	Types and requirements of good intersections	Design sketches	CO4
39	Grade Separated Intersections	Advantages and disadvantages	Flyover and interchange photographs	CO4
40	Types of Grade Separated Intersections	Cloverleaf, diamond, trumpet and underpass	Layout drawings and animations	CO4
41	Road Accidents	Definition, classification and causes	Accident case studies	CO5
42	Prevention of Road Accidents	Safety measures and traffic management	Safety campaign materials	CO5
43	Collision and Condition Diagram	Preparation and interpretation	Accident data analysis activity	CO5
44	Street Lighting	Necessity, types, luminaire, lumen and foot candle	Lighting fixtures and photographs	CO5
45	Arboriculture	Objectives, selection of trees, maintenance and protection of roadside trees	Roadside plantation case studies, revision quiz	CO5

LEARNING RESOURCES

1. Kadiyali, L.R., Traffic Engineering and Transport Planning.
2. Khanna, S.K., Justo, C.E.G. and Veeraragavan, A., Highway Engineering.
3. IRC: 67 – Code of Practice for Road Signs.
4. IRC: 35 – Code of Practice for Road Markings.
5. IRC Guidelines for Traffic Signals and Road Safety.
6. Ministry of Road Transport and Highways (MoRTH) Specifications.

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