GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering				Branch	Civil Engineering			
Semester	V				Version	1.0.0.0			
Effective from Academic Year		2020-21			Effective for the batch Admitted in			July 2018	
Subject code	1CI2506		Subject Name		ADVANCED TRANSPORTATION ENGINEERING				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:
The students have to know about basics of transportation engineering.

Course Learning Outcomes:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes: CO1. Understand the fundamentals of Traffic, Airport & Docks and Harbor Engineering. CO2. Explain essential features and requirements ofTransportation. CO3. Conduct different advantage of Transportation Engineering. CO4. Conduct different experiments on Traffic Studies, Design of Airport & Docks and Harbor Engineering.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hr
(A) Traffic Engineering				
UNIT – 1 INTRODUCTION	1.1 Explain elements of traffic engineering. 1.2 Elements of traffic and traffic flow. 1.3 Relation between the q , k and s 1.4 Fundamental diagram of traffic s 1.5 State the linear relationship between speed and concentration.	1a Explains about different elements of traffic engineering 1b Gives different fundamentals of traffic engineering. 1c Gives different relationship between elements of traffic.	5	3
UNIT – 2 TRAFFIC STUDIES	2.1 Necessity of traffic studies. 2.2 Origin and destiny survey (O.D. Survey). 2.3 Volume Study, Explain travel time and delay study. 2.4 Accidents studies, Parking studies, Traffic signal design studies.	2a Explains importance of traffic survey. 2b Gives different studies of elements of traffic i.e. volume study, travel time, etc.	10	7
UNIT – 3 MEASURE FOR OPERATION OF TRAFFIC	3.1 Legislation and enforcement, measures. 3.2 Scope of traffic measurement measures, Parking Regulation.	3a Explains different operations taken for traffic management.	5	5

(B) Airport Engineering				
UNIT – 1 INTRODUCTION	1.1 Modern aircrafts airport in India. 1.2 Explanation of working of (Fuselage, Wings, Engines, Airscrew of jet propulsion) 1.3 4 control {Elevator, Rudder, Ailerons, Flaps}, Landing gear.	1aGives basics knowledge about airport. 1b Explains different parts of aircraft.	3	2
UNIT – 2 AIRCRAFT CHARACTERISTICS	2.1 Significance and importance of aircraft characteristics. 2.2 Explanation of (Type of propulsion, Size of Aircraft, Weights of Aircraft.) 2.3 Capacity of aircraft, Speed characteristics, Turning radius, Fuel spillage, Heat blast and noise, Aircraft circling radius, Weight on gear system.	2aGives elements of aircrafts as well as characteristics of aircraft. 2b Explains working of aircraft.	4	3
UNIT – 3 PLANNING FOR AIRPORT	3.1 Airport in regional planning. 3.2 Airport in city planning. 3.3 Elements of airport planning. 3.4 Facilities of passengers and baggage. 3.5 Airport Capacity.	3a Explain planning of airport for different region. 3b Gives detail about different facilities provided by airport authority.	5	4
UNIT – 4 DESIGN CRITERIA FOR RUNWAY, TAXIWAY, AND APRON	4.1 Necessity. 4.2 Explain wind rose diagram. 4.3 Geometric design of runway and taxiway. 4.4 Classification of apron according to use	4a Gives geometric design of runway and taxiway. 4b Classifies apron according to its usage.	5	4
UNIT – 5 Air traffic control	5.1 Wind and Landing Direction 5.2 Necessity of airport lighting and marking 5.3 airport Traffic control system. 5.4 VFR, IFR	5a Explains necessity of airport lightning and marking.	3	2
(C) Docks and Harbour Engineering				
UNIT – 1 INTRODUCTION	1.1 The growth of Port. 1.2 Elements of V harbours. 1.3 Design consideration for Ocean structures. 1.4 Port administration.	1a Gives basic knowledge about ports. 1b Gives design consideration for Ocean structures.	2	2
UNIT-2 NATURAL PHENOMENON AND HARBOUR PLANNING & SITE INVESTIGATIONS	2.1 Wind, Tide, Current. 2.2 Types of harbour. 2.3 Choice of site for harbour. 2.4 Master plan for port planning. 2.5 Hydro graphic and Topographic Survey.	2a Explain types of harbour and also classify selection criteria for harbour choice and planning.	4	3
UNIT – 3 BERTHING STRUCTURE	3.1 General aspect of selection and design. 3.2 Piers, wharfs, Quarry, walls, and, jetties, Dolphins, Trestles, moles, and Moving Accessories.	3a Explain aspects of selection and design of dock. 3b Also explain different types of fender system and Mooring	5	4

	3.3 Fenders and Moorings 3.4 Necessities for fenders. 3.5 Energy absorbed by fenders during berthing. 3.6 Types of fender system and Mooring system.	system.		
UNIT – 4 NAVIGATIONAL AIDS & COASTAL EROSION AND PROTECTION	4.1 Necessities for navigational aids. 4.2 Buoys, Beacon, Light ship, Range light, Radar reflectors. 4.3 The coastal zones and beach profile. 4.4 Coastal protection works. 4.5 Berth nominshment.	4a Gives detailing about necessities for navigational aids.	5	4
UNIT – 5 CARGO STORAGE FACILITIES	5.1 Transit Shed. 5.2 Purpose, area of transit shed required, diversion of transit shed. 5.3 Water houses. 5.4 Open storage, cold storage building, Port administration building.	5a Gives different functions of sheds and cargo storage facilities.	4	2
		Total	60	45

List of Practical	
Sr.No.	Name of Practical
1	Spot speed survey
2	Delay study
3	Origin and Destination survey
4	Types of runway and taxiway
5	Seminar : Between 4 to 6 students (Different topics)

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Traffic engineering and Transportation Planning	L.R. Kandyali	Standard Book House
2	Docks and Harbour Engineering	S.C. Rangwala	Standard Book House
3	Railway engineering	S.C. Rangwala	Standard Book House

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Airport engineering	Arora and Khanna	Standard Publishers
2	Docks and Harbor Engineering	Oza & Oza	Standard Publishers
3	A course of railway engineering	S.C.Saxsena and S P Arora	Dhanpat Rai and sons

Link of Learning Web Resource	
1	www.Docks-Harbour-Engineering-S-P-Bindra.com
2	https://www.scribd.com
3	www.te&tp.org