

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Diploma Engineering				Branch	Civil Engineering			
Semester	VI				Version	1.0.0.0			
Effective from Academic Year			2020-21		Effective for the batch Admitted in			July 2018	
Subject code	1CI2607		Subject Name		PAVMENT DESIGN				
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 and pavement of rigid and flexible type.

**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. Various types of pavement.

CO2. Functions of components of pavement.

CO3. Different factors affecting design of pavement.

CO4. Identify different components of pavement and their functions & design flexible pavement.

The practical should be carried out in such a manner that students are able to acquire different learning outcomes from covered course.

**Course Content**

Name of Unit	Unit Content	Unit Learning Outcomes	Marks	Hr
<b>UNIT – 1 INTRODUCTION</b>	1.1 History of highway Pavements. 1.2 Requirements and Objectives of Pavements. 1.3 Flexible Pavement 1.4 Rigid Pavement	1a Give requirement and objectives of pavement 1b Difference between two types of pavements	5	3
<b>UNIT– 2 PAVEMENT COMPONENTS</b>	2.1 Function of pavement components 2.2 Soil Sub-grade and its assessment 2.3 Sub-base and Base Courses and their Evaluation 2.4 Wearing Course and its Evaluation	2a Discuss functions of components of pavement 2b Discuss evaluation of wearing course with examples	10	8
<b>UNIT– 3 FACTORS AFFECTING DESIGN OF PAVEMENTS</b>	3.1 Factors to be measured in design of Pavement 3.2 Design wheel load 3.3 Sub-grade soil 3.4 Climatic factors 3.5 Component of Pavement Materials 3.6 Environmental Factors	3a Calculate design wheel load for at least three types of traffic loads 3b Explain factors affecting design of pavement	15	10
<b>UNIT-4 DESIGN OF FLEXIBLE PAVEMENT</b>	4.1 Tyre pressure 4.2. Other factors 4.3. ESWL 4.4. Methods for Flexible Pavement design 4.5. IRC provisions for Flexible	4a Design a flexible pavement for different given loading conditions 4b Discuss key provisions of IRC recommendations for flexible pavement design	20	16

	pavement design 4.6. Methods of traffic volume survey & their future volume predictions	4c Determine future traffic volume as per IRC code for a given data.		
<b>UNIT – 5 INTRODUCTION TO RIGID PAVEMENT</b>	5.1 General design Consideration 5.2 Wheel load stresses, temperature stresses and combination of stresses 5.3 Design of Joints, Temperature stresses	5a Explain stresses and joints of rigid pavement 5b Discuss design considerations for rigid pavement design with examples	10	8
		Total	60	45

List of Practical		
No.	Unit	Name of Practical
1	I	Sketch of Typical C/S of different types of roads
2	V	Sketch of Types of Joint in Rigid Pavement
3	IV	Plate Bearing Test
4	IV	Field CBR Test
5	IV	Numerical on Design of Flexible Pavements for Highway
6	V	Numerical on Design of joints of Rigid Pavements For Highway
7	IV	Seminar on relevant topics

List of Instruments / Equipment / Trainer Board	
1	Test plate
2	Hydraulic jack & pump
3	Tripod, Plumb bob, spirit level etc
4	Dial gauges
5	Pressure gauge
6	CBR test machine

List of Text Books			
No	Title of Books	Authors	Publication
1	Principles of pavement design	Yoder & wit zorac	Jhonwilley & Sons
2	Principles and Practices of Highway Engineering	Dr.L.R.Kadiyali & Dr. N. B. Lal	Khanna publishers

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	IRC Code for flexible pavement – IRC – 37 -2001 IRC Code for Rigid pavement – IRC – 58 – 2002	-----	-----

Link of Learning Web Resource	
1	<a href="http://onlinemanuals.txdot.gov/txdotmanuals/pdm/pavement_evaluation.htm">http://onlinemanuals.txdot.gov/txdotmanuals/pdm/pavement_evaluation.htm</a>
2	<a href="http://www.cdeep.iitb.ac.in/nptel/Civil%20Engineering/Transportation%20Engg%201/72-homes/28home.html">http://www.cdeep.iitb.ac.in/nptel/Civil%20Engineering/Transportation%20Engg%201/72-homes/28home.html</a>
3	<a href="https://www.youtube.com/watch?v=uJntLQgEHD4">https://www.youtube.com/watch?v=uJntLQgEHD4</a>