

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Diploma Engineering				Branch	Civil Engineering			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year			2019-20		Effective for the batch Admitted in			July 2018	
Subject code	1CI2401		Subject Name		Mechanics of Structures – II				
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:
Engineering Mechanics (1ES202), Mechanics of Structure – I (1CI 2301)

Course Learning Outcomes:
Successful completion of the course shall make student be able to :
CO1. Understand static indeterminacy of structural components.
CO2. Understand behavior of such structural components under certain loading conditions.
CO3. Understand behavior of columns for different end conditions.
CO4. Analyse the structural components for principal stresses.
CO5. Apply the knowledge to real life problems.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
UNIT – 1 Fixed Beam	1.1 Different types of Determinate & Indeterminate Structures & Structural components/Elements. 1.2 Advantages of fixed beam over simply supported beam. 1.3 Concept of analysis by Area Moment method 1.4 μ and μ' diagram. 1.6 Numerical for SF & BM diagrams for fixed beam with central point load &/or UDL over Full Span.	Draw shear force & Bending moment diagram for fixed beams	08	08
UNIT – 2 Continuous Beam	2.1 Statically indeterminate beam like propped cantilever continuous beam with or without over hang define free moment & fixed end moment diagrams. 2.2 Theorem of three moment (clapeyron's theorem). 2.3 Formulae to find B.M of a continuous beam using theorem of three moment method. 2.4 Point of contra flexure & its importance. 2.5 Numerical to draw S.F & B.M diagram for two or three span continuous beams with different loading and support conditions. 2.6 Stiffness, flexibility, carry over factor & distribution factor. 2.7 Moment distribution method. 2.8 Numerical to draw S.F & B.M diagram for two or three span continuous beams with different loading and support conditions.	Draw shear force & Bending moment Diagram for continuous beam using three moment theorem moment distribution method	15	12

UNIT – 3 Principle Stresses & Principle Planes	3.1 Formulae for Normal , Tangential & Resultant Stresses due to Direct Orthogonal Stresses & Shear Stress. 3.2 Formulae for Principal Stresses and for Location of Principal Planes. 3.3 Mohr’s Circle and its application.	Calculate principal stresses & principal plane on a plane in a strained structural material.	15	12
UNIT – 4 Analysis Of Truss	4.1 Perfect & Imperfect Truss 4.2 Various trusses for different spans and Application. 4.3 Analysis of Triangle, North Light & Fan trusses under Panel Point Loads using Graphical & Method of Joint.	Analyse statically Determinate trusses.	12	08
UNIT – 5 Column & Strut	5.1 Column & Strut 5.2 Short & Long Column 5.3 End Condition of Column and effective Length of Column & Modes of Failure in column 5.4 Radius of Gyration , Slenderness Ratio 5.5 Euler’s Crippling Load 5.6 Rankin’s load / Buckling Load of Column.	Calculate load carrying capacity of columns & struts.	10	05
		Total	60	45

List of Practical		
No.	Unit	Name of Practical
1	ALL	Solve at least six problems based on every unit.
2	4	Analyse truss using graphical method (at least three trusses) and verify using analytical method.
3	5	Demonstrate End Conditions of Column using suitable model / example.

List of Instruments / Equipment / Trainer Board	
1	Model for column with different end conditions.

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Strength of Materials	R S Khurmi, N. Khurmi	S Chand Publications
2	Strength of Materials	S Ramamrutham	Dhanpat Rai Publishing Company(P) Ltd.
3	Strength of Materials	Dr. B. C. Punamia, Er. Ashokkumar Jain Dr. Arun Kumar Jain	Laxmi Publications

Link of Learning Web Resource	
1	https://www.coursera.org/learn/mechanics-1
2	https://nptel.ac.in/courses/106106108