<table>
<tr><td colspan="7" align="center">GANPAT UNIVERSITY</td></tr>
<tr><td colspan="7" align="center">FACULTY OF ARCHITECTURE DEISGN & PLANNING</td></tr>
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Programme	Bachelor of Architecture		Branch/Spec.	INSTITUTE OF ARCHITECTURE	
Semester	III		Version	2.0.0.0	
Effective from Academic Year		2020-21	Effective for the batch Admitted in		June 2019
Subject code	2IIIA04SDS	Subject Name	Structural Design and Systems III		

Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)	Total		CE	SEE	Total
	L	TU	P	TW				
Credit	2	-	-	-	2	Theory	40	60	100
Hours	2	-	-	-	2	Practical	-	-	-

Objective:

- Observe and evaluate how structural resolutions are important in realization of architectural design concept. At this stage, students shall be exposed to applications of principles of mechanics of rigid and deformable bodies in engineering applications.
- Understand basic properties of solids and sections which influence their behaviour under the effect of various types of forces on fixed beam, Arches.

Learning Outcome:

LO1: Apply principles of statics to determine reactions & internal forces in statically determinate structures.

LO2: Students are taught Determine displacements of statically determinate structures.

LO3: Determine stresses due to axial & eccentric loading.

LO4: Determine buckling load for columns & struts with different end conditions.

CONTENT & TEACHING UNITS		
Unit	**Content**	**Hrs**
A	**Fundamentals Of Statically Determinate Structures:** Types of statically determinate & indeterminate structures, static and kinematic indeterminacy, stability of structures, principle of superposition, Maxwell's reciprocal theorems. Computation of internal forces in statically determinate structures such as plane truss, plane frame, grids.	8
B	**Shear Stress:** Calculation of shear stress for simply supported & cantilever beams of various cross sections like T, L, I, O, Rectangle, Hollow sections etc. **DIRECT AND BENDING STRESSES:** Members subjected to eccentric loads, middle third rule, kernel of section, chimney subjected to wind pressure, retaining walls. **COLUMNS AND STRUTS:** Buckling of columns, different end conditions, effective length, least radius of gyration, Euler's and Rankine's formulae, columns with initial curvature, eccentrically loaded columns, columns with lateral loading.	8

C	**Fixed Beams &Moment Distribution Method:** Computation of fixed-end actions for various types of loads and secondary Effects using basic principles, beams of varying moment of inertia. Analysis of propped cantilever beams & beams using Moment distribution method.	8
D	**Arches:** Calculation internal forces in three hinge arches with circular and parabolic shapes subjected to various types of loading.	8

Text Books	
1	Mechanics of Structures Vol-I; Junarkar S.B. & Shah H.J.; Charotar publishing house, Anand
2	Strength of Materials and Theory of Structures; Vol. II - B.C.Punmia

Reference Books	
1	Mechanics of Structures Vol-I; Junarkar S.B. & Shah H.J.; Charotar publishing house, Anand
2	Wang C. K.; Intermediate Structural Analysis; Tata McGraw Hill book Company, New Delhi
3	Elements of Civil Engineering (IV Edition) - S. S. Bhavikatti
4	Popov E.P.; Engineering Mechanics of Solids; Prentice Hall of India, New Delhi
5	Gere & Timoshenko; Mechanics of Materials; CBS Publishers & Distributors, Delhi
6	Mechanics of Structures - Prof.Jurnakar
7	Strength of Materials and Theory of Structures; Vol. II - B.C.Punmia
8	Hibbler R C; Mechanics of Materials; Pearson Education
9	Strength of Materials - R.K. Rajput
10	Structural Engineering for architecture - A.P. Dongre