GANPAT UNIVERSITY

FACULTY OF ARCHITECTURE DESIGN & PLANNING

Programme	Bachelor of Design	Branch/Spec.	INSTITUTE OF DESIGN
Semester	I	Version	3.0.0.0
Effective from Academic Year	2021-22	Effective for the batch Admitted in	June 2021
Subject code	3IA05STR	Subject Name	STRUCTURE - I

Teaching scheme						Examination scheme (Marks)				
(Per week)	Lecture(DT)		S/W/T		Total		CIE	SE	UE	Total
	L	TU	S/W/T	TW						
Credit	2	-	-	-	2	Theory	40	20	40	100
Hours	2	-	-	-	2	Jury/Viva/TW/ TW	-	-	-	-

Objective:

- The course introduces Fundamentals of structural systems and analysis.
- The course develops comprehensive understanding about building loads, concepts of load transfer, various structural components and their intrinsic relationships, basic structural systems and elementary structural analysis.

Learning Outcome:

LO1: Understand different types of loads on buildings, effects of load on building, load transfer & behaviour of various structural components

LO2: Understand Mechanics of Solids - forces & force systems, its equilibrium, statically determinate beams, Centroid, Moment of inertia & Trusses.

LO3: Analyse a design decision situation and structural system

CONTENT & TEACHING UNITS

Unit	Content	HRS
1	Introduction of Loads on Buildings (i) Building Loads: Types of loads on building, Effects of loads on building, Various types of load transfer actions. (ii) Structural Components: Various structural components: truss, arch, dome, vault etc & its behaviour under load with reference to various materials.	14
2	Mechanics of Solids (i) Fundamentals of statics: Introduction to Force, its types, Characteristics & Equilibrium. Force systems (Coplanar-concurrent & non-concurrent), it's Resultant, Moments, couple moments. (ii) Statically determinate beams: Concept of Stability & determinacy. Types of loads (concentrated & uniformly distributed), Types of supporting condition & its reactions. Bending moment and shear force diagrams (cantilevered, simply supported, continuous), its importance, Location & magnitude of maximum bending moment & shear force. (iii) Centroid and moment of inertia -of standard & Composite geometry, its importance, radius of gyration. (iv) Trusses – behaviour, usage, advantages & Analysis.	22

Reference Books

1	Junnarkar,. S.B., 2017. Mechanics of structures Vol.1: Strength of materials.
2	Junnarkar, S.B., 2017. Mechanics of structures Vol.2: Theory and analysis of structures.
3	Desai &Mistry.Engineering Mechanics - Statics and Dynamics
4	Jeffrey Cook.Seeking Structure from Nature
5	SalvaDorie.Fundamentals of Structures
6	S.B Jurnakar& H .J Shah.Applies Mechanics

Note: Continuous Internal Evaluation shall be divided into A. 20% -Attendance B. 80% -Periodic Evaluation

CIE- Continuous Internal Evaluation, SE-Summative Evaluation (Jury/Viva/TW/Theory Exam), UE-University Exams (Jury/Viva/TW/Theory Exam)