GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Diploma of Vocation (D.Voc), 2nd Semester
Branch: Architectural Assistantship
Subject Name: Structure – I
Subject Code: 1220602

With effective from academic year 2021- 22

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory		Tutorial / Practical		
L	P	OJT	C	University exams (ESE)	Progressive Assessment (PA)	External Practical/ Viva Exam (ESE)	Internal Practical/ Viva Exam (ESE)	
3	-	-	3	50	-	-	-	50

L-Lecture; P-Practical; OJT – On Job Training; C – Credit; ESE – End Semester Examination; PA – Progressive Assessment

SEMESTER II

Focus:

To introduce the basic principles governing structural systems. Concept of direct force mechanism in structures, concept of resultant force, tension, and compression. Equilibrium of forces, concept of structure and tie.

SR. NO.	Contents:	HR
1	• Fundamental principles of engineering mechanics, • SI units and its applications, unit conversions, internal and external forces.	7
2	• Laws of forces (parallelogram and polygon), principle of transmissibility, concept of strength, concept of mechanical properties of material (tensile, compressive, flexure, toughness, and malleability, fatigue with definition)	8
3	• Forces: Introduction to types of forces, behavior of loading, cause & effect of various forces, load transfer mechanism on building. • Force and force system	7
4	• Concept of resultant force and its application • Types of beams, support, and Reactions.	8
5	• Introduction, types of trusses, analysis of a plane truss (method of joint only) • Simple stresses and strains –types of stress and strain, simple numerical • Bending moment and shear force diagrams – Concept of shear force and	12

	bending moment with respect to points uniformly distribution load.	
	Total	**42**

Projects:

Understanding the human structural system.

Understanding natural and manmade loads and its considerable effect.

Importance of stress, bending moment diagram and force distribution in structure.

Skills:

Develop knowledge of consideration of forces - distribution and its effect.

Method:

Sketches, Models, Documentary, Presentation.

References:

- Junnarkar S. B. & Shah H. J. – Mechanics of Structures (I & II)
- Khurmi R.S.-Strength of Materials
- Beer & Johnston -Mechanics of Materials
- Rawal B.M-Experimental Mechanics of Solids
- Parikh J. P.-Understanding Concept of Structural Analysis Design
- Parikh J. P -Fundamentals of Structural Analysis & Design

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks				
R Level	**U Level**	**A Level**	**N Level**	**E Level**
5	**20**	**15**	**5**	**5**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above levels (Bloom's Taxonomy)