

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Architectural Assistantship

Semester: 4

Subject Name STRUCTURE - II

Sr. No.	Course content
1.	SIMPLE STRESS AND STRAIN: 1.1 Types of Stress and Strain, 1.2 Shear stress - elastic limit - Hook's Law, Poisson's ratio. 1.3 Modulus of elasticity - Modulus of rigidity - Bulk modulus. 1.4 Bars of varying cross section (examples) composite section. 1.5 Modular ratio - Hoop stress - volumetric strain.
2.	COLUMN AND STRUT: 2.1 Axially loaded compression member - Crushing load, Buckling or critical load or crippling load. 2.2 Euler's theory of long column (in brief) 2.3 Know the formulae in different cases, (for effective length and crippling load). 2.4 Case (1) When both ends of the member are pinned. (2) When one end is fixed and other end is free. (3) When both ends are fixed. (4) When one end is fixed and the other is pinned. [Factor of Safety] Examples related to above topics
3.	S.F. AND B.M. DIAGRAM FOR VARIOUS END CONDITIONS OF BEAM: 3.1 Definition - S.F. - B.M. Concept of S.F. and B.M. 3.2 S.F. and B.M. diagram for following cases. (a) Cantilever (b) Simply supported (c) Beam with overhangs 3.3 Point of contra flexure 3.4 Examples related to above topics 3.5 Inter relation between S.F. and B.M. diagram.
4.	STRESSES IN BEAMS 4.1 Theory of simple bending 4.2 Section modulus "Z" 4.3 Moment of Resistance 4.4 Bending stress diagrams for different sections of beams (examples) 4.5 Formula for shear stress in beam section 4.6 Shear stress diagrams for different sections of beam viz. rectangular, circular, semi-circular, I-section, T-section. (examples)

5.	SLOPE & DEFLECTION IN BEAMS 5.1 Definition 5.2 Expression for slope & deflection in beams (with sketches) i. Simply supported beam with point load at centre ii. Simply supported beam with UDL on whole span iii. Cantilever beam with point load at free end iv. Cantilever beam with UDL on whole span 5.3 Examples related to above topics
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Reference Books:

Sr. No.	Name of Books	Author
1.	Strength of Materials	S. Ramarutham
2.	Reinforced Concrete Structures	V. Baikov . E Sigalov Vol 1. & Vol 2
3.	Design of R.C.C. Structure	K.L. Rao, Charotar Book Stall
4.	Design of R.C.C. Structures	Jay and Jain

Note : Equal weightage to theory and examples