

SGUJARAT TECHNOLOGICAL UNIVERSITY

B.E Semester: 4

Civil Engineering

Subject Code 140603

Subject Name Structural Analysis-2

Sr.No	Course contents
1	Fixed and continuous beams: Computation of fixed-end actions for various types of loads and secondary effects, beams of varying moment of inertia, analysis of propped cantilever beams.
2	Consistent deformation method: Analysis of propped cantilever beams, rigid & elastic support, beams of varying moment of inertia.
3	Energy principles: Castigliano's theorems, computation of displacements of statically determinate beams, trusses and frames by unit load method, analysis of indeterminate structures – beams, trusses, frames & two hinge arches.
4	Slope deflection method: Analysis of continuous beams for various loading including settlement/rotation of support, analysis of simple portal frame with sway.
5	Moment distribution: Analysis of continuous beams & frames including sway, use of symmetry of structure upto two storeyed / two bay frames.
6	Kani's method: Concept of method application to continuous beams and frames with sway.
7	Influence lines for indeterminate structures: Muller-Breslau's principle, steps for obtaining I.L for reaction and internal forces in propped cantilever and continuous beam, qualitative I.L for rigid jointed structures having higher degree of statically indeterminacy.
8	Prestressed Concrete: Introduction, Properties of high strength materials, methods of prestressing –pre tensioning and post tensioning, losses in prestressed concrete, analysis of section for flexure.

TERM WORK: This will consist of graphical and/or analytical solutions of at least 30 problems based on the above course. Practical examinations shall consist of oral based on term work and above course.

Reference Books:

1. Junnarkar S.B. & Shah H.J.; *Mechanics of Structures Vol-II*; Charotar publishing house, Anand
2. Wang C.K.; *Intermediate Structural Analysis*; Mc Graw Hill book Company, New Delhi
3. Reddy C.S.; *Basic Structural Analysis*; Tata Mc Graw Hill Publishing Company Ltd, New Delhi
4. Dr. Punmia B. C., Jain Ashok & Jain Arun; *Strength of materials & Theory of Structures*; Laxmi Publications, New Delhi
5. Krishna Raju; *Prestressed Concrete*; Tata Mc Graw Hill Publishing Company Ltd, New Delhi
6. William Weaver, Jr & James M. Gere; *Matrix Analysis of Framed Structures*; CBS Publishers & Distributors, Delhi
7. IS: 1343 - Indian Standard code of practice for prestressed concrete