GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Civil Engineering (Computer Aided Structural Analysis & Design)

Subject Name Matrix Analysis Of Framed Structures

Sr. No	Course content
1.	Introduction: Principles of Virtual work, Basic concepts of flexibility, Analysis of Plane truss, plane frames and grids using flexibility member approach.
2.	Stiffness methods: Analysis of Plane truss, plane frames, grids, space truss, space frame and composite structures by member approach. Special problems such as member discontinuities, non prismatic members, curved members, and beams on elastic supports, secondary effects due to temperature charges, Pre-strains and end displacements semi- rigid connections, plastic analysis, and effect of shear deformations by stiffness method, sub-structuring, Programming techniques for solution of large number of simultaneous equations.
3.	Introduction to Non-linearity in structure and non-linear analysis.

Reference Books:

1. Matrix Analysis of Framed Structure - Gere & Weaver
2. Structural Analysis - Ghali & Nevelle
3. Computer Analysis of Structural Systems - Fleming J.F.
4. Elementary matrix analysis of structures - H. Kardestuncer
5. Linear Analysis of Frame works - Graves Smith
6. Non-linear Structures - Majid
7. Computer Methods of Structural Analysis - Beaufait, Rowan, Hadley, Heckett
8. Numerical methods in finite element analysis - Bathe & Wilson