

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: III

## Civil Engineering (Computer Aided Structural Analysis & Design)

Subject Name: **Plates & Shells (Major Elective - IV)**

Sr. No	Course content
1.	Introduction to thin plates, small deflection theory, plate equation. Isotropic and orthotropic plates, bending and twisting of plates, Navier's solution, Levy's solution and energy method, rectangular, circular plates with variable rigidity in Cartesian and polar co-ordinates, Numerical solutions.
2.	Shell behaviour, shell surfaces and characteristics, classification of shells equilibrium equations in curvilinear co-ordinates. Stress-strain & force displacement relations. Membrane analysis of shells of revolution and cylindrical shells under different loads. Shallow shells, membrane solution of elliptic paraboloids and hyperboloids. Solution of some typical problems. Introducing to stability of plates and stiffened plates.

### Reference Books:

1. Theory of plates and shells - Timoshenko
2. Theory & analysis of plate - Classical & Numerical methods - Szilard
3. Design & construction of concrete shell roofs - Ramaswamy, G. S.
4. Theory of cylindrical shells - Glibson J. E.