

SE552: Theory of Plates and Shells

Teaching Scheme			Credits C	Marks Distribution				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE	CE	ESE	CE	
3	2	0	5	70	30	30	20	150

Course Content:

Sr. No	Topics	Teaching Hrs.
1	<p><u>Plates:</u></p> <p>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. Plastic analysis of plates, yield-line theory, Introducing to stability of plates.</p>	28
2	<p><u>Shells:</u></p> <p>Shell behavior, shell surfaces and characteristics, classification of shells equilibrium equations in curvilinear co-ordinates. Stress-strain & force displacement relations. Membrane analysis of shells of revolution. Cylindrical shells under different loads. Shallow shells, membrane solution of elliptic paraboloids and hyperboloids. Solution of some typical problems. Introducing to stability of shells.</p>	14
Total Hrs.		42

Reference Books:

1. S. Timoshenko, "*Theory of Plates and Shells*", McGraw-Hill Publishing Company.
2. R. Szilard, "*Theory & Analysis of Plate - Classical & Numerical Methods*", John Wiley & Sons Publishing Company
3. Ramaswamy, G. S., "*Design & Construction of Concrete Shell Roofs*", McGraw-Hill Publishing Company
4. Glibson J. E., "*Theory of Cylindrical Shells*", North-Holland Publishing Co
5. N. K. Bairagi, "*Shell Analysis*", Khanna Publishers,