

SE501: Matrix Methods of Structural Analysis

Teaching Scheme			Credits	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 contents:

Sr. No.	Topics	Teaching Hrs.
1	<p><u>Flexibility Member Approach:</u></p> <p>Analysis of Continuous beam, Plane truss, Plane frame and Grid.</p>	08
2	<p><u>Stiffness Member Approach:</u></p> <p>Analysis of Continuous beam, Plane truss, Plane frame, Grid, Space truss, Space frame and Composite structures including secondary effects such as Temperature variations, Pre-strains and Restrained displacement; Programming direct stiffness method.</p>	18
3	<p><u>Special Problems:</u></p> <p>Member discontinuities, beams on elastic supports, semi-rigid connections, effect of shear deformations by stiffness method, Sub-structure analysis and symmetry concepts.</p>	08
4	Introduction to Non-linearity in structure and non-linear analysis.	04
5	Programming techniques using programming languages.	04
Total Hrs.		42

Reference Books:

1. Weaver W. and Gere J. M., “*Matrix Analysis of Framed Structure*”, CBS Publishers, Delhi.
2. Ghali and Nevelle, “*Structural Analysis*”, Spon Press, London.
3. Aslam Kassimali, “*Matrix Analysis of Structures*”, Cengage Learning, USA.
4. H. Kardestuncer, “*Elementary matrix analysis of structures*”, Mc-Graw Hill, USA.
5. Meghre and Deshmukh, “*Matrix Analysis of Structures*”, Charotar Publication, Anand.
6. Beaufait Rowan, “*Computer Methods of Structural Analysis*”, Hadley and Heckett.
7. Graves Smith, “*Linear Analysis of Frame works*”, Ellis Horwood Ltd.
8. Fleming J.F, “*Computer Analysis of Structural Systems*”, McGraw-Hill Education.
9. McGuire, Gallagher and Ziemian, “*Matrix Structural Analysis*”, John Wiley & Sons, Inc. 2000.