

PART 1: INTRODUCTION TO STRUCTURAL ANALYSIS AND LOADS.

1. Introduction to Structural Analysis.
2. Loads on Structures.

PART 2: ANALYSIS OF STATICALLY DETERMINATE STRUCTURES.

3. Equilibrium and Support Reactions.
4. Plane and Space Trusses.
5. Beams and Frames: Shear and Bending Moment.
6. Deflections of Beams: Geometric Methods.
7. Deflections of Trusses, Beams, and Frames: Work – Energy Methods.
8. Influence Lines.
9. Application of Influence Lines.
10. Analysis of Symmetric Structures.

PART 3: ANALYSIS OF STATICALLY INDETERMINATE STRUCTURES.

11. Introduction to Statically Indeterminate Structures.
12. Approximate Analysis of Rectangular Building Frames.
13. Method of Consistent Deformations – Force Method.
14. Influence Lines for Statically Indeterminate Structures.
15. Slope-Deflection Method.
16. Moment-Distribution Method.
17. Introduction to Matrix Structural Analysis.

Appendix A: Areas and Centroids of Geometric Shapes.

Appendix B: Review of Matrix Algebra.

Appendix C: Computer Software.

Appendix D: Three-Moment Equation.