

**ETABS Advance**

**1. Introduction, modelling process and techniques**

- a. Introduction to the Various complexities like Geometrical Complexity, Code based Complexities, Structural Engineering fundamental Based complexity.
- b. Introduction to the Stiffness Modification Factors for Various elements of the building.
- c. Introduction of the complex modelling techniques.
- d. Modelling of various type of composite Columns.
- e. Modelling with insertion point and its significance.

**2. Analysis: Process and Techniques**

- a. Different types of Complexities in the project and how to deal with efficiently.
- b. Stiffness Modification Factor for the various Building elements and their uses and application along with the codal norms.
- c. International norms for Highrise building analysis and design.
- d. Gust factor analysis for the application of wind load on the tall building.
- e. Wind tunnel analysis and its use in Highrise buildings.
- f. Highrise committee norms, its structural significance, its optimization and reporting.
- g. Why Non-linear (Buckling, Creep and Shrinkage) analysis is important for Highrise buildings? When to perform, how to perform and what are the parameters to be considered practically.
- h. Modal analysis: study and its use in model dynamics time history analysis.
- i. Vibration analysis and its use in the steel structure.
- j. Energy v/s virtual work diagrams. Its application and use.
- k. Modelling of composite structure, analysis and design techniques.
- l. Torsional Irregularity and Orthogonal axis analysis and its application.
- m. Soft storey checks and its application using various codes.
- n. Identifying plan and vertical irregularities in the structure and applying suitable corrections.

**3. Design of structural elements**

- a. Design of columns, beams, slabs, shear walls, transfer slabs and brace elements.
- b. Structural design optimization after all advance analysis.