Module 1: Introduction to ETABS and Basic Modeling

- **Overview of ETABS:**
  - Introduction to structural analysis and design concepts.
  - Understanding the ETABS user interface, menus, and icons.
  - Key features and advantages of ETABS for building design.
- **Modeling Tools & Techniques:**
  - Creating new models, quick templates, and grid systems.
  - Defining material properties (concrete, steel, etc.) according*to relevant codes (e.g., IS 456, IS 800).
  - Defining section properties for beams, columns, slabs, and walls.
  - Drawing structural objects: beams, columns, braces, floor/wall objects, reference points, planes.
  - Editing model geometry: replicating, extruding, merging, aligning, dividing, moving objects.
  - Understanding and assigning releases, supports, and diaphragms.
  - Checking model for errors and warnings.

Module 2: Load Definition and Application

- **Load Patterns:** Defining various load types (Dead, Live, Wind, Earthquake, Temperature, etc.).
- **Load Cases:** Creating and managing different load cases.
- **Load Combinations:** Defining load combinations based on relevant design codes (e.g., IS 456, IS 1893, IS 875).
- **Assigning Loads:**
  - Joint loads, frame loads, shell loads.
  - Applying floor finishes, wall loads, and live loads.
  - Understanding and applying wind loads (e.g., as per IS 875 Part 3).
  - Understanding and applying seismic loads (e.g., as per IS 1893).
  - Diaphragm assignment (rigid, semi-rigid, flexible).

Module 3: Structural Analysis

- **Types of Analysis:**
  - Gravity analysis (2D & 3D).
  - Static analysis.
  - Dynamic analysis methods:
    - Response Spectrum Analysis (RSA).
    - Time History Analysis.
    - Pushover Analysis (for seismic evaluation).
  - P-Delta analysis.
  - Construction sequence analysis.

- **Meshing Techniques:** Dealing with irregular structures, auto and manual meshing.
- **Interpretation of Results:**
    - Graphical displays: deformed shapes, force/stress contours (moments, shear, axial forces).
    - Tabular display of results.
    - Reaction diagrams.
    - Understanding time period calculation and wind displacement.

Module 4: Structural Design and Detailing

- **Design Aspects:**
    - Concrete frame design (beams, columns).
    - Steel frame design.
    - Composite column design.
    - Shear wall design.
    - Slab design (one-way, two-way, flat slabs, suspended slabs).
    - Foundation analysis and interaction (often integrated with CSI SAFE software).
- **Code-Based Design:** Application of relevant building codes and standards.
- **Optimization Techniques:** Refining designs for efficiency and cost-effectiveness.
- **Detailing & Documentation:**
    - Extracting reinforcement details.
    - Creating and managing drawing sheets.
    - Generating detailed reports (summary reports, design output reports).
    - Customizing user-defined reports.

Module 5: Advanced Topics and Practical Applications (often in advanced courses)

- Modeling and analysis of high-rise buildings.
- Nonlinear analysis of structures.
- Performance-based design.
- Integration with other software (AutoCAD, Revit, CSI SAFE).
- Case studies and real-world projects involving multi-story buildings, elevated water tanks, etc.
- Troubleshooting common issues.

Key Skills Acquired:

- Proficiency in ETABS software.
- Expertise in structural modeling and analysis.
- Understanding of BIM processes and documentation.
- Ability to apply relevant building codes.
- Interpretation of analysis results.
- Practical skills in optimizing designs.

Many courses also emphasize hands-on practice, assignments, and a final project involving

the analysis and design of a multi-story building.