One of Computer and Structure, Inc.'s software, ETABS, was used to create the mathematical model of the Burj Khalifa, currently the world's tallest building, designed by Chicago, Illinois-based Skidmore, Owings & Merrill LLP (SOM). In the *Structural analysis* section of their December 2009 Structural Engineer magazine article entitled *Design and construction of the world's tallest building:*

DURATION OF THE COURSE : 60 HOURS (4 WEEKS).
MINIMUM ELIGIBILITY CRITERIA AND PRE-REQUISITE : BASIC KNOWLEDEGE OF Structure.

Module 1 (Week 1 – 16 hours):

- Overview of Structural Analysis and Design
- Introduction
- Workflow of ETABS
- ETABS User Interface
- Coordinate System.
- Global Coordinate System.
- Local Coordinate System.
- Unit System.
- Creating New Project.
- Use Saved User Default Setting.
- Use Setting from a model file.
- Use Built-in Setting With.
- New Model Quick Template.
- Grid Dimension(Plan).
- Grid Labels.
- Custom Grid Spacing.
- Edit Grid Spacing: Edit Grid Data, Grid System Name, System Origin, Bubble Size, Grid Color, Quick Start New Rectangular Grid.
- Story Dimensions: Story Data, Custom Story Data.
- Add Structural Objects.
- Quick Add Story. Edit Stories
- Add New Grid System.
- Modify/ Show Grid System.
- Grid Options: Delete/ Copy Grid System.
- Add Grid at Selected Joints.
- Material Properties: Region, Material Type, Standard, Grade.
- Defining Materials.
- Material Property Data: Material Name, Material Type, Material Display Color.
- Section Properties.
- Define Various Sections.
- Section Property Data.

Module 2 (Week 2 - 14 hours):

- **Modeling:**
- Draw Joint Objects.
- Draw Beam/Column/Brace Objects.
- Draw Floor/Wall Objects.
- **Modeling:**
- Draw Reference Points.
- Draw Reference Planes.
- Draw Wall Stacks
- Project 1.
- Object Selection Tools:
- Select Tool.
- Deselect Tool.
- Replicate.
- Linear, Radial, Mirror, Story Extrude.
- Joint to Frame, Frame to Shell
- Merge Joints
- Align Joints/Frames/Edges
- Move Joints /Frames/Edges
- Edit Frames.
- Divide Frames.
- Modify/Show Frame Type
- Project 2.
- Divide Shells.
- Merge Shells.
- Expand/Shrink Shells.
- Split Shell Edge.
- Remove Joints from Shells.
- Chamfer Slab Corners.
- Reverse Wall Local 3 Axis.
- Modify/show Wall Curve Type

Module 3 (Week 3 – 16 hours):

- Assigning Section Properties. Property Modifier.
- Local Axes.
- Slab Section.
- Wall Section.
- Joints.
- Support Specification
- Project 3.
- Project 4.
- Define Load Conditiones.
- Add New Load.

- Modify/ Delete Load.
- Define Load Pattern.
- Shell Uniform Load Sets.
- Joint Loads.
- Frame Loads.
- Point Load
- Distributed Load.
- Trapezoidal Load.
- Temperature Load.
- Wind Load.
- Shell Loads.
- Assign Loads.
- Wind Load
- Introduction ○ Terminologies.
- Load Cases: Add New Case, Add Copy of Case, Modify/ Show Case.
- Load Combinations.
- Project 4.
- Project 5.
- Set Load Cases to Run, Check Model, Analysis Display Result:
- Deformed Shapes, BMD, SFD, Shell Stresses, Tabular Reports, Support
- Reactions.

Module 4 (Week 4 – 14 hours):

- Display: Undeformed Shape, Joint Load Assigns, Frame Load Assigns, Shell Load Assigns Project 5.
- Project 6.
- Concrete Frame Design: Introduction.
- Design Procedure.
- View/Revise Preferences.
- Select Design Groups.
- Select Design Combinations.
- Start Design Check.
- Interactive Design.
- Display Design Info.
- Change Design Section.
- Verify Analysis Vs Design Section.
- Verify All Members Passed.
- Slab Design: Introduction
- Components of Slabs.
- Structural Geometry and Properties for Flat Slab.
- Structural System Properties, Restraints at Bottom,
- Loads, Floor Diaphragm Rigidity
- Detailing

- Export
- Report Creation
  Print Graphics, Show Input / Output Text Files
- Rendering of Project.
- Render view in Detailing.