QUEST
Professional Center

PROFESSIONAL TRAINING COURSE

Course No. 1542

Structural Analysis Using ETABS Training Course

CIVIL & STRUCTURAL ENGINEERING
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION
5 Days

DELIVERY
Classroom

LOCATION
Baku, Azerbaijan

DATES
21 – 25 Sept 2026

Scheduled Event Details

CITY	Baku, Azerbaijan
DATE	21 – 25 Sept 2026
DELIVERY TYPE	Classroom
COURSE FEE	€5,300

Course Overview

The Structural Analysis Using ETABS Training Course is a specialized professional program designed to develop the technical knowledge and practical skills required to model, analyze, interpret, and review structural systems using ETABS. The course provides participants with a structured understanding of how structural engineering principles are translated into reliable analytical models, with emphasis on model accuracy, engineering assumptions, load definition, structural behavior, and interpretation of analysis results.

The program focuses on the practical application of ETABS for the analysis of building structures, including reinforced concrete and steel structural systems. Participants examine the complete workflow from defining structural geometry, materials, sections, supports, diaphragms, and structural elements to establishing load patterns, load cases, and load combinations. Particular attention is given to developing analytical models that appropriately represent the intended structural behavior of the building.

A major component of the Structural Analysis Using ETABS Training Course is the interpretation and verification of structural analysis results. Participants learn how to evaluate reactions, internal forces, displacements, story drifts, modal characteristics, and other important structural responses. The course emphasizes that software-generated results must be reviewed through engineering judgment and consistency checks rather than being accepted without verification.

The course also addresses practical structural analysis challenges, including irregular structural configurations, lateral load behavior, seismic analysis concepts, wind loading, diaphragm behavior, structural stability, modeling errors, and inconsistencies between design assumptions and analytical results. Through practical exercises and engineering case studies, participants develop a systematic approach to identifying modeling issues and improving the reliability of structural analysis.

By combining structural engineering principles with practical ETABS applications, the course supports engineers in producing more consistent analytical models, evaluating structural performance, communicating technical findings, and supporting sound engineering decisions. It is particularly relevant to organizations involved in building design, construction, engineering consultancy, infrastructure development, industrial facilities, and project management.

Objectives

- Analyze the fundamental principles of structural analysis and apply them when developing ETABS analytical models during the course.
- Develop accurate two-dimensional and three-dimensional structural models representing the geometry and intended behavior of building structures.
- Evaluate material properties, structural sections, supports, diaphragms, and connectivity requirements before performing structural analysis.
- Apply appropriate gravity, wind, seismic, and other relevant loading conditions according to project requirements and the applicable design basis.
- Design organized load patterns, load cases, and load combinations suitable for structural analysis and engineering evaluation.
- Assess structural responses including reactions, axial forces, shear forces, bending moments, displacements, and story drifts.
- Analyze the behavior of structural systems under vertical and lateral loading and identify critical structural responses.
- Apply systematic model-checking procedures to identify modeling errors, connectivity problems, inappropriate restraints, and inconsistent assumptions.
- Evaluate modal and dynamic structural behavior and relate analytical results to the expected response of the building.
- Improve structural models based on analysis findings, engineering requirements, and identified performance limitations.
- Assess analytical results using engineering judgment and appropriate consistency checks before using them for design decisions.
- Develop a practical workflow for documenting, reviewing, and communicating ETABS structural analysis results at the end of the course.

Who Should Attend

This course is designed for civil and structural engineers involved in structural analysis, building design, engineering consultancy, construction, and project delivery. It is particularly suitable for structural design engineers, civil engineers, project engineers, engineering consultants, design coordinators, structural analysis specialists, and professionals responsible for developing or reviewing analytical models for buildings and other structures.

The program is also valuable for engineers working with reinforced concrete and steel structures, contractors and construction organizations, engineering design offices, project management teams, and technical departments responsible for reviewing structural calculations and design documentation. Professionals involved in structural assessment, technical verification, design coordination, and engineering quality control can also benefit from the practical focus of the program.

The course is appropriate for engineering managers, project managers, technical managers, and decision makers who require a practical understanding of ETABS structural analysis outputs and their implications for design and project decisions. It is particularly relevant to government engineering departments, municipalities, infrastructure organizations, construction companies, engineering consultancies, property developers, industrial organizations, and organizations managing major building projects.

Learning Outcomes

- Explain the fundamental principles of structural analysis and their application within ETABS.
- Create two-dimensional and three-dimensional analytical models for building structures using appropriate structural modeling principles.
- Define materials, structural sections, supports, diaphragms, and connectivity conditions accurately within an analytical model.
- Establish suitable load patterns, load cases, and load combinations for different structural loading conditions.
- Model and evaluate the effects of gravity, wind, and seismic loading on building structures.
- Interpret reactions, axial forces, shear forces, bending moments, displacements, and story drift results.

- Evaluate the structural behavior of beams, columns, walls, frames, diaphragms, and other major structural components.
- Review modal analysis results and understand their relationship to the dynamic behavior of building structures.
- Identify common ETABS modeling errors and determine appropriate corrective actions.
- Compare analytical results with expected structural behavior to identify unusual or potentially unreliable results.
- Use analysis results to support structural design reviews, engineering decisions, and model optimization.
- Prepare clear technical documentation summarizing the analytical model, loading assumptions, key results, engineering observations, and recommended actions.

Course Outline

DAY 01

Structural Modeling Fundamentals Using ETABS

- Fundamentals of structural analysis and the role of computer-based structural modeling
- Introduction to ETABS and its application in building structural analysis
- Understanding the ETABS modeling environment and primary modeling tools
- Development of structural grids, levels, nodes, and structural elements
- Modeling beams, columns, structural walls, slabs, and other building components
- Defining material properties and structural section properties
- Modeling supports, restraints, releases, and structural connectivity
- Understanding diaphragms and their role in building behavior
- Relationship between architectural drawings, structural drawings, and analytical models

> **PRACTICAL APPLICATION**
>
> Development and initial verification of a complete building analytical model

DAY 02

Structural Loads, Load Cases, and Load Combinations

- Fundamentals of structural loading and load transfer mechanisms
- Definition and application of dead loads and superimposed dead loads
- Modeling live loads and appropriate load distribution
- Application of concentrated, distributed, and area-based loads
- Modeling wall and partition loads within building structures
- Fundamentals of wind loading and lateral load application
- Fundamentals of seismic loading and earthquake response considerations
- Development of load patterns and load cases in ETABS
- Establishing appropriate load combinations for structural analysis

PRACTICAL APPLICATION

Developing a complete loading model and evaluating load paths and structural responses

DAY 03

Structural Analysis and Interpretation of ETABS Results

- Running structural analysis and reviewing analysis messages
- Understanding support reactions and equilibrium checks
- Interpretation of axial forces, shear forces, and bending moments
- Evaluation of structural displacements and story drifts
- Analysis of beam and column responses
- Evaluation of structural wall and frame behavior
- Understanding floor and diaphragm response
- Introduction to modal analysis and dynamic structural characteristics
- Comparing analytical results with expected structural behavior

PRACTICAL APPLICATION

Analyzing a building model and identifying critical structural responses

DAY 04

Model Verification, Seismic Behavior, and Structural Performance

- Systematic procedures for reviewing and validating ETABS analytical models
- Checking structural geometry, connectivity, restraints, and diaphragms
- Reviewing load definitions, load cases, and load combinations
- Identification and correction of common modeling errors
- Understanding irregularities and their influence on structural response
- Evaluation of story drift, displacement, and lateral structural behavior
- Interpretation of modal periods, mode shapes, and participating mass concepts
- Review of seismic response and lateral load behavior
- Evaluation of structural performance based on analytical results

> **PRACTICAL APPLICATION**
>
> Reviewing a model containing selected errors and improving its analytical reliability

DAY 05

Advanced Applications and Integrated Structural Analysis

- Development of an integrated ETABS model for a multi-story building
- Analysis of reinforced concrete structural systems
- Analysis of steel framing systems and mixed structural configurations
- Evaluation of combined vertical and lateral load effects
- Identification and assessment of critical structural members and locations
- Linking structural analysis results with design and engineering review requirements
- Use of analysis reports and graphical results for technical communication
- Establishing a structured quality-control process for ETABS analytical models
- Documentation of modeling assumptions, loading criteria, analytical results, and engineering observations
- Best practices for managing structural analysis models within engineering projects

DAY 05 — CONTINUED

FINAL WORKSHOP

Complete building model development, structural analysis, results review, identification of critical responses, and preparation of an engineering action plan

Register or Request More Information

Course page: https://quest-training.com/courses/structural-analysis-using-etabs-training-course
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