MERCURY

Structural Design for Non-Structural Engineers

14 – 18 November 2027
Istanbul (Turkey)



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Ref: 15314_303927 **Date:** 14 – 18 November 2027 **Location:** Istanbul (Turkey) **Fees:** 5500 Euro

Introduction:

Construction is the world's largest industry; anything constructed must be designed first. Structural Engineering is a critical field focusing on the analysis and design of structures, with a primary goal of ensuring safety, functionality, and economy. Designers collaborate with specialists such as architects and operational managers throughout the design process.

Understanding the principles of structural analysis and design is essential for effective coordination during the implementation phase, which involves statutory approvals, planning, quality assurance, and material procurement. This structural design course offers non-structural engineers an introduction to the fundamental concepts of structural design.

Participants in this structural design training will gain knowledge of the behavior of materials under load, the selection of construction materials, and basic design principles for various structures. The emphasis is on reinforced cement concrete RCC and steel structures while briefly touching upon masonry and timber.

Targeted Groups:

- Building Inspectors.
- Project Managers.
- Construction Supervisor's importance.
- Municipal Officials.
- Architects.
- Quantity Surveyors.
- Insurance Surveyors.
- Concrete Technologists.
- Reinforcement Detailers.
- Structural Fabricators.
- Building Maintenance Personnel.
- Structural Rehabilitation Staff.

Course Objectives:

At the end of this structural design course, the participants will be able to:

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- Fully understand the role of the structural engineer.
- Comprehend the behavior of structural members under loading.
- Understand the concept of stress functions like tension, compression, shear, and bending.
- Use the basic concepts for the analysis of statically determinate and indeterminate structures.
- Analyze the deformation of members under loading.
- Understand the significance of material properties in design.
- Undertake basic design of Reinforced Cement Concrete Structures.
- Learn about Undertake basic design of Steel Structures.
- Undertake basic design of Masonry and Timber Structural Members.

Targeted Competencies:

By the end of this structural design training, the participant's competencies will:

- Introduction to structural engineering principles of strength of the material.
- Structural analysis.
- Design philosophies.
- Design procedure of reinforced cement concrete RCC structures.
- Understand the design procedure of steel structures.
- Design of masonry and wooden structures.

Understanding Structural Design for Non-Structural Engineers:

In this course on structural design for non-structural engineers, participants will understand advanced structural design, basic structural design concepts, and the definition of structural design. They will also learn how to navigate and use various structural design tools.

Participants will be encouraged to explore strategic structural design methods, allowing them to engage with structural design processes, solutions, and analyses. Those interested in formally recognizing their skills can inquire about structural design certification or certificate options.

The structural design course will detail the types of structural design and offer insights into non-engineered structures. Participants will have a clearer understanding of structural design, enabling them to effectively apply the principles of structural design to their respective projects.

Course Content:

Unit 1: Introduction to Structural Engineering Principles of Strength of Material:

- Theory of elasticity.
- Stress-strain characteristics.
- Sectional properties.
- Deflection and deformation.

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Unit 2: Structural Analysis:

- Principle of Mechanics.
- Determinate and indeterminate structures.
- Determination of stress functions direct, bending and shear stresses.
- Analysis of statically determinate structures.
- Analysis of statically indeterminate structures.
- Know the analysis of deformation under loading.

Unit 3: Design Philosophies:

- Material behavior under stress.
- Working stress design.
- Limit state design.
- Loads.

Unit 4: Design Procedure of Reinforced Cement Concrete RCC Structures:

- Material and Components.
- Stress behavior.
- Ultimate and permissible stresses.
- Design of beams and slabs.
- Design of walls and columns.
- Design of frames.
- Prestressed concrete design.

Unit 5: Design Procedure of Steel Structures:

- Materials and Properties.
- Stress behavior.
- Methods and design of fastenings.
- Design of beams.
- Design of columns and struts.
- Learn about the design of tension members.
- Design of trusses.
- Design of built-up sections.
- Limit state design.

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Unit 6: Design of Masonry & Wooden Structures:

- Properties of masonry.
- Design of walls.
- Design of columns.
- Construction of arches.
- Material and properties of wood.
- Preservation methods.
- Permissible stresses.
- Design of columns and beams.