

Scandinavian Academy Training Center

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Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

Course: Structural Design For Non Structural Engineers

Code	City	hotel	Start	End	price	Language - Hours
CV-463SA	Al Khobar	Hotel Meeting	2027-05-16	2027-05-20	12950 SR	En - 25

Course Description

Construction is the largest industry in the world and anything constructed needs to be designed first. Structural Engineering deals with the analysis and design aspects, the basic purpose of which is to ensure a safe, functional and economical structure. While designing, the designer constantly interacts with specialists like architects, operational managers, etc. Once the design is finalized, the implementation takes involvement of people to handle aspects like statutory approvals, planning, quality assurance, material procurement, etc. The entire exercise can be undertaken in a highly coordinated way if everyone involved understands the `project language`, which is a combination of designs and specifications. To understand the language fully, it is necessary to appreciate the principles of structural analysis and design and a course on this topic comes in handy here. Participants of this workshop will gain a basic knowledge of structural engineering that includes principles of analysis of structures and their application, behavior of materials under loading, selection of construction materials and design fundamentals for RCC and steel structures.

The emphasis has been kept on the determination of nature and quantum of stress Developed under loads and the way structures offer resistance to it. Being the most widely used construction materials, RCC and steel has been covered in detail though masonry and timber have also been described briefly.

Course Objective

- 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 analysis of statically determinate and indeterminate structures
- Analyze deformation of members under loading
- Understand the significance of material properties in design
- Undertake basic design of Reinforced Cement Concrete Structures
- Undertake basic design of Steel Structures
- Undertake basic design of Masonry & Timber Structural Members

Who Should Attend?

- Building Inspectors
- Project Managers
- Construction Supervisors
- Municipal Officials
- Architects
- Quantity Surveyors
- Insurance Surveyors
- Concrete Technologists
- Reinforcement Detailers
- Structural Fabricators
- Building Maintenance Personnel
- Structural Rehabilitation Staff

Course Outline

Introduction to structural engineering principles of strength of material

- Theory of elasticity
- Stress-strain characteristics

- Sectional properties
- Deflection & deformation

Structural analysis

- Principle of mechanics
- Determinate & indeterminate structures
- Determination of stress functions (direct, bending & shear stresses)
- Analysis of statically determinate structures
- Analysis of statically indeterminate structures
- Analysis of deformation under loading

Design philosophies

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

Design procedure of reinforced cement concrete (rcc) structures

- Material & components
- Stress behavior
- Ultimate & permissible stresses
- Design of beams & slabs
- Design of walls & columns
- Design of frames
- Prestressed concrete design

Design procedure of steel structures

- Materials & properties
- Stress behavior
- Methods & design of fastenings

- Design of beams
- Design of columns & struts
- Design of tension members
- Design of trusses
- Design of built up sections
- Limit state design

Design of masonry & wooden structures

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

The Scandinavian Academy for Training Center adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training Center.

Program Timings: 9:00 AM to 2:00 PM

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

Our Success Partners

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