Global Horizon
TRAINING CENTER

Training Course:
Structural Design for Non?Structural Engineers

27 April - 1 May 2025
Istanbul (Turkey)
DoubleTree by Hilton Istanbul Esentepe

Training Course:
Structural Design for Non‐Structural Engineers

Training Course code: EN6086 From: 27 April - 1 May 2025 Venue: Istanbul (Turkey) - DoubleTree by Hilton Istanbul Esentepe Training Course Fees: 6500 ⬡ Euro

Introduction

Architects and non-structural engineers often work together with structural engineers on design projects. An understanding of the basic concepts of structural engineering could make their jobs easier. If you are involved with the design and construction of concrete, steel, or wood structures, you will find this course particularly helpful. It is assumed that course participants have no formal training in structural engineering. Basic concepts and design examples will be reviewed without in-depth mathematical derivations. This course is not designed to make you a structural engineer, but you will leave the course with an understanding of the structural design process and know when you need to call in an expert.

Objectives

- To present basic principles of strength of materials and structural analysis

- To introduce the codes that govern structural design

- To familiarize participants with available design aids

- To familiarize participants with common construction materials - Steel, Concrete and Masonry, and Wood Products

Target Audience

Architects; non-structural engineers; technicians and technologists civil, mechanical, electrical, mining, chemical and biological; plant engineers; fabricators and manufacturers of structural systems; general contractors; property managers; directors of physical plants; building inspectors, and others who would like to know more about structural systems.

Benefits to participants

- Understand the fundamentals of structural analysis

- Learn how to apply loads, select materials, and calculate footings, foundations, columns, beams, floor systems, shear walls and diaphragms

- Achieve an understanding of Shear and Moment diagrams and how these are used by designers in concrete, steel and wood

- Learn the behavior of structures and ways to save construction costs

Course Outlines of Structural Design for Non‐Structural Engineers

Structural Requirements

- Loads

- Provincial Building Codes and Acts

- National Building Code of Canada

  - Changes in NBC 2010

  - Part 9 vs. Part 4

  - Limit States Design

  - Strength and Stability

  - Principal and Companion Loads

  - Loads and Effects

  - Load Combinations

  - Importance Factors and Categories

  - Factored Resistance

  - Factored Loads

    - Dead loads

    - Live Loads

    - Load Variation with Tributary Area

    - Climate Data

  - Structural Evaluation and Upgrading of Existing Buildings

- Design Examples

- Forces

- Structure Characteristics

- Components of Structures

- Loading Properties

- Support Properties

- Material Properties

- Geometric Properties

- Member Design

- Stress

- General Equations for Member Design

- Force Diagrams

- The Effects of Continuity

- Special Considerations for Frames

- Load Transfer Systems

- Cross-sectional Area

- Moment of Inertia

- Section Modulus

- Radius of Gyration

- Composite Construction

- Beams

- Columns

- Frames

- Trusses

- Arches

- Plates

- Space Trusses and Grids

- Design Examples

- Structural Member Properties

- Structural Behavior

Day 2:

Design of Steel Structures

- General Information

- Steel Types

- Steel Products

- Residual Stresses

- Evaluation of Existing Structure

- Design of New Structures

    - Tension Members

    - Compressive Members

    - Base Plates

    - Beams

    - Bolted Connections

    - Welded Connections

    - Beam Columns

- Composite Design

- Gerber Girders

- Design Examples

Day 3:

Design of Concrete, Concrete Structures and Masonry

- History of Concrete

- CSA Standards

- Fundamentals of Concrete

    - Concrete Materials and Proportions

        - Cementing Materials

        - Aggregate

        - Water

        - Air

- - - Admixtures

    - Properties of Concrete

    - High Performance Concrete

    - Concrete Reinforcing - General Properties

- Methods of Concrete Construction

- Concrete Design

- Basic Structural Design Checks

- Design of Un-reinforced Elements

- Reinforced Concrete

- Design of Beams

- Bearing

- Design of One-Way Slabs

Day 4:

Bearing

- Design of Columns

- Two-Way Slabs

- Specifying Concrete

- Concrete Reinforcing - Tension Development and Shop Drawings

- Testing

- Placing and Finishing Concrete

- Design of Various Concrete Structures

- Remediation Using FRP

- Concrete Specification

- Design Examples

Day 5:

Structural Design Using Wood and Wood Products

- Canadian Forests

- Wood as a Material

- CSA Standards

- National Lumber Grades

- Standard Lumber Sizes

- Properties

  - Compression

  - Tension

  - Bending

  - Shear

- Wood Design

- Design Resources

- Factored Resistances

  - Bending Members

  - Compression Members

  - Tension Members

- Notches

- Modification Factors

- Combined Load

- Bearing

- Diaphragms and Shear Walls

- Engineered Wood Products

- Fastenings

- Design Examples

Registration form on the Training Course:
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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

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