



Civil Engineering

Building Preventive Maintenance

Course Introduction

This course is planned to answer technical questions frequently asked by the experienced engineer and executive. It includes information about the significance of applicable codes and standards, critical characteristics of a given structure, critical loads, load combinations and load effects, types and causes of common deficiencies of structures, workable preventive measures for the decay and deterioration of structures, and the use of innovative technology and new materials.

Target Audience

- civil engineers.
- Experienced Civil Engineers Seeking Professional Development
- Architects and Urban Planners
- Entrepreneurs in the Construction Industry
- Project Managers in the Construction Industry

Learning Objectives

- To understand the philosophy and significance of codes and standards
- To learn about the uncertainty associated with loads and load effects
- To understand the causes and mechanisms leading to deficient structures
- To workout preventive measures to counteract deterioration of structures
- To plan effective maintenance programs
- To understand the nature of innovative technology and new materials
- To learn about specific needs and requirements for concrete, steel and other structures
- To comprehend the role of the designer, the contractor and the supervision in producing sound structures

- To provide an overview for the role of effective management
- To learn from past lessons
- To learn from historical structures that stood the test of time

Course Outline

• DAY 01

Codes and standards

- Why do we need the codes?
- Past and Current Structural Codes and Standards
- The multidisciplinary design effort
- Design – construction process
- Design standards and their relationship to structural performance
- Construction standards
- List of 100 most frequently cited ASHA construction standards
- Drawings and specifications
- Technical specifications
- Shop drawings
- Document review
- Design and construction checklists
- The uniform code for building conservation

• Day 02

Loads and hazards: their nature, magnitude and consequences

- Establishing the loads and load effects on the structure
- Safety of Structures
- Serviceability of structures
- Establishing the capacity of the structure
- Critical characteristics of steel structures
- Critical characteristics of concrete structures
- Accelerated Testing
- Cumulative Error
- Computer software
- The Dangers of Computer Analysis

• Day 03

Reliability Based Condition Assessment

- Structural Reliability
- Parallel Systems
- General Systems
- Performance Prediction
- Updating
- Steel buildings – common areas of deficiency
- Reinforced and prestressed concrete buildings – common areas of deficiency
- Human Perceptions of Durability
- A summary of seismic deficiencies and design constraints
- Maintenance versus repair
- Different Maintenance Options
- Accepting Undesirable Existing Conditions
- Preventing deterioration
- Preventive measures
- Case Studies

• Day 04

Strategies for Maintenance and Repair

- Condition Survey
- Initial Site Visit
- Data Acquisition
- Condition Survey
- Detailed Inspections
- Tools and Equipment
- Common Problems
- Sampling For Test Specimens
- Testing Procedures
- Investigation Summary
- Peer review
- Project delivery methods

• Day 05

Changing technology

- Innovative materials
- Typical structural challenges
- Lessons from the past
- Lessons from historical structures
- Monitoring Programs

- Unforeseen problems
- Some practical tips
- A word of caution
- Old age death
- The weaknesses of mother earth
- The future of structures
- Challenges of the 21st century

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 7, 2025	April 11, 2025	5 days	4250.00 \$	UAE - Dubai
Oct. 6, 2025	Oct. 10, 2025	5 days	4250.00 \$	UAE - Abu Dhabi
July 28, 2025	Aug. 1, 2025	5 days	4950.00 \$	England - London