

Using the ACI Code for Advanced Analysis and Design of Reinforced Concrete

Particular Uncracked Sections and Prestressed Concrete

Introduction

It is vital to concentrate on comprehending the design of pre-stressed concrete and unique reinforced concrete buildings. The industrial sector uses these primary components of reinforced concrete buildings extensively, particularly in the onshore oil and gas sectors.

The participants in this Advanced Analysis and Design of Reinforced Concrete Using ACI Code training course will become proficient in the design of reinforced concrete for industrial projects in general and oil and gas projects in particular.

The sole tool available to participants to help them concentrate on appropriate design techniques that support business operability and safety will be the ACI code.

Objectives

This training program seeks to provide participants in the foundation course with the knowledge and skills necessary to design slabs and beams using sophisticated procedures as well as to hone their skills in designing unusual structures, uncracked structures, and prestressed concrete. The following are the precise goals:

To instruct attendees on how to handle a variety of unique issues requiring modeling and simulation analytical techniques for reinforced concrete slabs and beams

To provide sophisticated models that use workshops to replicate reinforced concrete systems

To impart to delegates knowledge on how to maintain constructions safe from seismic forces

Instructing delegates on the usefulness of intact portions while creating unique constructions

To instruct delegates on how to use prestressed concrete and post tension slabs to manage concrete thickness and save a proportion of reinforced steel.

Training Methodology

To guarantee optimum knowledge, comprehension, and retention of the material taught, this Advanced Analysis and Design of Reinforced Concrete using ACI Code training course will make use of a range of tried-and-true adult learning approaches. There will be a lot of interaction and participation in the daily sessions. Images and videos will be utilized to provide examples.

This training course splits the time between studying the theory and mathematics of analysis on the one hand, and using practical techniques and workshops on the other, while also comprehending how and why these techniques function.

Organizational impacts

- Reduce engineering costs by enhancing the capacity of delegates to carry out self-design
- Maximising the concrete-to-steel ratio portions by enhancing participants' abilities to do a thorough study and use sophisticated problem-solving methods
- Develop organizational design skills that will be optimized to complete projects on schedule.

Personal Impact

Each participant will get a thorough grasp and a great deal of hands-on experience with a variety of the most popular modeling, simulation, and predictive analytical tools; they will all be directly applicable to a broad range of unique situations. Delegates will especially acquire:

An awareness of the study and design of unique structures

- Understanding how to maintain the serviceability of areas that are not cracked
- Enough situational awareness to recognize when a method may provide false results
- The capacity to identify which analysis types are appropriate for a given set of problems

Who should attend?

This course, Advanced Analysis and Design of Reinforced Concrete using ACI Code, is intended for experts whose work involves designing unique structures, including uncracked parts as well as post-tensioned or pre-stressed ones. Because this training course contains a lot of modeling and analysis, participants must be able to tackle complicated issues with comprehensive working analysis and design calculations.

Senior-level civil and structural engineers who already need to have in-depth knowledge of structural engineering tasks and how to collaborate throughout the design process would find this Course N Carry training course to be valuable.

Course Outline

Day 1

Slabs and Beams of Reinforced Concrete with Advanced Design

- Strip Approach
- Yield Line Approach
- Friction Shear
- Composite Concrete Beams and Horizontal Shear Transfer
- Shear wall design
- Strap-and-Tie Framework
- Model Truss
- Deep Rays
- Shear and bearing walls
- Corbels

Day 2

Design for Resistance to Earthquakes

- Impact of Restricting and Presenting Well-Known Models
- The Lengths of Flexural Hinges
- Maximum Deformation and Ductility of Flexured Members
- Relationships between Moment-curvature
- Cycle-Action of Beam-Column Component
- Moment Distribution in Reinforced Concrete Beams Redistribution
- Beam-Column Joint Design

Day 3

Unified Evaluation of Structures with Reinforced Concrete

- Strap-and-Tie Framework
- Truss Model of equilibrium (plasticity)
- Bernoulli Truss Model of Computability
- Mohr Truss Computability Model
- Modified Truss Model
- RC System Structural Modelling
- Deformation of Uncracked Sections (temperature, creep, and shrinkage)

Day 4

Creation of Unique Structures

- Arches
- Unique Styles of Trusses and Frames
- Roofs with Folding Plates
- Slab Systems in Arches
- Silos
- Towers for cooling
- Subterranean and Aboveground Storage Tanks

Day 5

Pre-stressed Concrete Design

- Both pre-and post-tensioning
- Components of Prestressed Concrete
- Calculating Stress
- Prestressed Section Shapes
- Losses from Prestress
- The Maximum Tensile Strength of Reinforced Sections
- Deflections in
- Shear Reinforcement Design