

DURABILITY OF REINFORCED CONCRETE STRUCTURES :ASSESSMENT REPAIR AND RISK BASED INSPECTION

“Safeguarding Concrete Structures Through Smart Durability, Repair, and Risk-Based Strategies.”

Schedule

Venue (InHouse)	Fees
At Your Organization Premises	Ask For The Quotation

► **Available delivery methods:** In-House Training

Introduction

This course addresses the challenges of ensuring the long-term durability of reinforced concrete (RC) structures, focusing on modern assessment methods, repair technologies, and risk-based inspection (RBI) frameworks. The training blends theoretical knowledge with practical insights to help engineers and asset managers maintain structural integrity under aggressive environmental and operational conditions.

Objectives

By the end of this course, participants will be able to:

- Understand mechanisms of deterioration in reinforced concrete structures.
- Conduct durability assessments and evaluate remaining service life.
- Apply modern repair and rehabilitation techniques.
- Implement risk-based inspection (RBI) methodologies for RC structures.
- Develop cost-effective strategies for durability management.

Why Attend

- Stay ahead with proactive durability planning and maintenance
- Reduce unplanned outages and failures in critical infrastructure
- Apply internationally accepted practices in RC repair and risk-based inspections
- Boost compliance with ISO, ACI, and other durability-related standards

Target Audience

- Civil & Structural Engineers
- Asset Integrity & Maintenance Managers
- QA/QC Inspectors
- Construction Supervisors
- Owners/Operators of Industrial and Infrastructure Facilities

Individual Benefits

- Gain confidence in performing technical assessments of aging RC structures
- Learn practical repair techniques with lasting impact
- Advance your skills in risk-based maintenance planning

Organizational Benefits

- Extend asset life while reducing lifecycle costs
- Enhance safety and operational reliability
- Prioritize maintenance investments based on actual risk and damage

Instructional Methodology

- Expert-led presentations and case studies
- Hands-on interpretation of damage and repair strategies
- Group exercises using real-life scenarios
- Interactive sessions with Q&A
- Provision of sample checklists and RBI frameworks

Course Outline

DETAILED 5-DAY COURSE OUTLINE (Customizable) Training Hours: 07:30 AM – 03:30 PM Daily Format: 3–4 Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Fundamentals of Durability & Deterioration Mechanisms

- Overview of RC structures and durability design
- Environmental and loading factors affecting performance
- Carbonation, chloride ingress, corrosion, sulfate attack

Day 2: Condition Assessment & Non-Destructive Testing (NDT)

- Visual inspection techniques and damage categorization
- Use of NDT: rebound hammer, ultrasonic pulse velocity, half-cell potential
- Core sampling and laboratory evaluations

Day 3: Repair Materials and Methods

- Patch repair, jacketing, cathodic protection
- Injection of cracks and voids
- Selection criteria for materials: mortars, polymers, FRP, corrosion inhibitors

Day 4: Risk-Based Inspection (RBI) for Concrete Structures

- RBI methodology: likelihood vs. consequence of failure
- Developing inspection plans based on criticality
- Integration with asset integrity management systems

Day 5: Case Studies and Workshop

- Rehabilitation of bridges, plants, and buildings
- Interactive session: assess, plan, and propose a repair/RBI strategy for a real-life structure
- Wrap-up, discussion, and feedback

Certification

All participants will receive a Certificate of Completion titled: “Durability and Risk-Based Repair of Reinforced Concrete Structures.”

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In-House / Customized Training

Interested in running this course for your team?

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