Reinforced Concrete Durability Assessment and Repair Course

26 – 30 April 2027
Addis Ababa

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Training Center

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Ref: 527_223745 **Date:** 26 – 30 April 2027 **Location:** Addis Ababa **Fees:** 6000 Euro

Overview

Reinforced Concrete Durability Assessment and Repair Course is a one-week advanced course for structural engineers, durability specialists, asset engineers, inspection teams, repair consultants, contractors, and owners who leave with a Reinforced Concrete Durability Assessment and Repair Plan. Participants trace exposure-driven deterioration, design condition investigations, interpret corrosion evidence, estimate intervention urgency, and select compatible protection and repair strategies. Agile Leaders Training Center connects concrete durability assessment with service-life decisions and verifiable repair controls.

Who Should Attend

- Teams responsible for durability investigations and asset condition decisions
- Functions that plan surveys, testing, diagnosis, and intervention priorities
- Personnel who specify repair materials, methods, and quality controls
- Owners and consultants who review residual service life and maintenance strategy
- Contractors and inspectors responsible for repair execution and monitoring

The course assumes participants can interpret concrete drawings and basic test reports, and it leaves out introductory concrete technology, general structural design, and emergency stabilization design.

Departments and Industries

The course supports departments that manage durability, repair, and service-life decisions for reinforced-concrete assets.

- Buildings, bridges, marine, transport, water, and industrial assets
- Structural engineering, asset integrity, and technical assurance
- Inspection, materials laboratories, and nondestructive evaluation
- Maintenance, rehabilitation, and capital renewal programmes
- Owners, consultants, contractors, and specialist repair firms

Learning Objectives

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

- Analyze exposure history and deterioration mechanisms
- Build a zoned condition-assessment programme
- Evaluate corrosion, cracking, and material test evidence
- Diagnose causes and prioritize intervention needs
- Compare compatible repair and protection strategies
- Build quality and post-repair monitoring controls

Course Agenda

Day 1: Durability Mechanisms and Exposure

- Asset History and Exposure Environment Map
- Carbonation, Chloride Ingress, and Corrosion Initiation
- Moisture, Sulfate, Chemical, and Freeze-Thaw Actions
- Cracking, Delamination, Spalling, and Reinforcement Loss
- Deterioration Hypothesis and Investigation Questions

Day 2: Condition Survey and Testing

- Desk Study, Inspection Zones, and Survey Grid
- Visual Mapping and Defect Classification
- Cover, Delamination, and Nondestructive Evaluation Selection
- Carbonation Depth, Chloride Profile, and Corrosion Testing
- Sampling, Destructive Correlation, and Data Quality Controls

Day 3: Diagnosis and Service-Life Decisions

- Evidence Triangulation and Cause Confirmation
- Corrosion Probability, Activity, and Consequence Matrix
- Structural Significance and Serviceability Screening
- Residual Service-Life Scenarios and Uncertainty Log
- Repair Priority, Intervention Threshold, and Risk Register

Day 4: Repair and Protection Strategy

- Repair Objectives and Performance Requirements
- Concrete Removal, Reinforcement Treatment, and Patch Compatibility
- Surface Treatments, Coatings, Inhibitors, and Cathodic Protection
- Crack Treatment, Joint Strategy, and Moisture Management
- Option Selection, Whole-Life Implications, and Repair Phasing

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Day 5: Quality Assurance and Monitoring

- Exercise: Build an Exposure and Deterioration Map
- Exercise: Select Tests for a Zoned Investigation
- Exercise: Diagnose Corrosion from Mixed Evidence
- Exercise: Compare Repair and Protection Options
- Capstone Exercise: Durability Assessment and Repair Plan

Practical Exercises

The course uses suggested activities to connect deterioration evidence with proportionate repair decisions.

- Suggested activity: map exposure, defects, reinforcement details, moisture paths, and suspected deterioration mechanisms by asset zone.
- Suggested activity: select nondestructive and destructive tests, define sampling logic, and record method limitations.
- Suggested activity: combine chloride, carbonation, corrosion, cracking, and delamination evidence into a defensible diagnosis.
- Suggested activity: prepare a repair plan with objectives, compatibility checks, quality hold points, acceptance criteria, and monitoring indicators.

FAQs

Who suits this reinforced concrete durability course?

It suits professionals who inspect, diagnose, specify, execute, or approve durability interventions and assumes familiarity with concrete drawings, deterioration terminology, and routine test reports.

How does this course differ from a general concrete repair course?

It begins with exposure mechanisms, zoned evidence, corrosion diagnosis, service-life scenarios, and intervention thresholds before selecting repair or protection methods.

Which investigation methods are considered?

Participants select visual mapping, sounding, cover measurement, nondestructive evaluation, carbonation, chloride, corrosion, strength, and material sampling methods according to the condition question and limitations.

Does the course provide structural strengthening design?

No. It screens structural significance and repair implications, while detailed strengthening analysis and design remain separate specialist responsibilities.

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What does the capstone produce?

The capstone produces a Reinforced Concrete Durability Assessment and Repair Plan containing exposure zones, hypotheses, tests, diagnosis, service-life scenarios, priorities, options, quality controls, and monitoring measures.

Conclusion

Participants take back a Reinforced Concrete Durability Assessment and Repair Plan linking exposure history, deterioration mechanisms, survey evidence, corrosion diagnosis, intervention thresholds, compatible repair options, quality assurance, and monitoring. The plan makes uncertainty visible and supports service-life decisions without replacing detailed structural design.