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CONSTRUCTION MANAGEMENT | CM-052

Concrete Technology and Durability

Contact

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Address

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Course content

Why Attend

Concrete is the most widely used construction material in the world, yet poor mix design, placement, curing or protection still cause cracking, honeycombing, corrosion of reinforcement and premature deterioration. Durability problems may take years to appear but can be extremely costly to repair.

This Concrete Technology and Durability training course provides a practical understanding of concrete materials and how to achieve strong, durable structures. Participants learn about cement types and supplementary materials, aggregates and admixtures, mix design, fresh and hardened properties, batching, transport, placing, compaction and curing, quality testing, deterioration mechanisms and durability design for aggressive environments.

Course Methodology

• The course combines technical explanation with case studies, test results and photographs of defects. Participants review mix designs, interpret test reports, diagnose defects, plan pours and curing regimes and develop durability specifications for different exposure conditions.

Course Objectives

• Explain the constituents of concrete and their roles

• Understand the principles of concrete mix design

• Describe fresh and hardened concrete properties

• Manage batching, transport, placing, compaction and curing

• Plan and interpret concrete quality control tests

• Identify causes of cracking and common concrete defects

Target Audience

• Site and project engineers

• Structural and materials engineers

• Quality control engineers and inspectors

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Course content

- Construction managers and supervisors

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Course outline

Detailed course outline

Day-by-day outline for Concrete Technology and Durability.

Day 1 - Concrete Materials

- 09:00-09:34 | Cement types and their properties
- 09:34-10:08 | Supplementary materials: fly ash, slag and silica fume
- 10:08-10:42 | Aggregates: grading, shape and quality requirements
- 10:42-11:00 | Mixing water quality and its effects
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Mixing water quality and its effects (continued)
- 11:46-12:20 | Chemical admixtures and their applications
- 12:20-12:53 | Sustainability and lower carbon concrete options
- 12:53-14:00 | Exercise: selecting materials for different applications

Day 2 - Mix Design and Properties

- 09:00-10:00 | Principles of concrete mix design
- 10:00-10:30 | Water to cement ratio and strength relationships
- 10:30-11:00 | Workability, slump and flow properties
- 11:00-11:30 | Coffee break
- 11:30-12:00 | Setting, heat of hydration and early age behaviour
- 12:00-12:30 | Strength development and hardened properties
- 12:30-13:00 | Special concretes: self-compacting and high performance
- 13:00-14:00 | Workshop: reviewing a concrete mix design

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Day 3 - Site Practice

- 09:00-09:34 | Batching, mixing and transport of concrete
- 09:34-10:08 | Planning pours and placement methods
- 10:08-10:42 | Compaction and avoiding honeycombing
- 10:42-11:00 | Curing methods and their importance
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Curing methods and their importance (continued)
- 11:46-12:20 | Concreting in hot weather and cold weather
- 12:20-12:53 | Formwork striking times and early loading
- 12:53-14:00 | Exercise: planning a large concrete pour

Day 4 - Quality Control and Defects

- 09:00-09:34 | Sampling and testing fresh concrete
- 09:34-10:08 | Compressive strength testing and acceptance criteria
- 10:08-10:42 | Non-destructive testing of hardened concrete
- 10:42-11:00 | Plastic shrinkage, thermal and settlement cracking
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Plastic shrinkage, thermal and settlement cracking (continued)
- 11:46-12:20 | Surface defects and their causes
- 12:20-12:53 | Investigating and repairing defective concrete
- 12:53-14:00 | Case study: diagnosing cracking in a structure

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Day 5 - Durability and Deterioration

- 09:00-09:34 | Exposure classes and durability requirements
- 09:34-10:08 | Reinforcement corrosion from chlorides and carbonation
- 10:08-10:42 | Sulphate attack and alkali-silica reaction
- 10:42-11:00 | Cover, permeability and protective measures
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Cover, permeability and protective measures (continued)
- 11:46-12:53 | Durability design for marine and hot climates
- 12:53-13:27 | Inspection and maintenance of concrete structures
- 13:27-14:00 | Personal action plan for concrete quality

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Seminar dates

Available seminar dates

Live dates and pricing for Concrete Technology and Durability generated from the course details page.

Date	Location	Format	Fee
14 - 18 December 2026	London	Classroom	**€2,915**
21 - 25 December 2026	Barcelona	Classroom	**€2,275**
7 - 11 December 2026	Frankfurt	Classroom	**€2,175**
11 - 15 January 2027	London	Classroom	**€2,915**
18 - 22 January 2027	Barcelona	Classroom	**€2,275**
25 - 29 January 2027	Frankfurt	Classroom	**€2,175**
4 - 8 January 2027	Istanbul	Classroom	**€2,825**
15 - 19 February 2027	London	Classroom	**€2,915**
22 - 26 February 2027	Barcelona	Classroom	**€2,275**
1 - 5 February 2027	Frankfurt	Classroom	**€2,175**

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Seminar dates

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Date	Location	Format	Fee
8 - 12 February 2027	Kuala lumpur	Classroom	**€2,425**
22 - 26 March 2027	London	Classroom	**€2,915**
1 - 5 March 2027	Barcelona	Classroom	**€2,275**
8 - 12 March 2027	Frankfurt	Classroom	**€2,175**
15 - 19 March 2027	Madrid	Classroom	**€3,400**
5 - 9 April 2027	London	Classroom	**€2,915**
12 - 16 April 2027	Barcelona	Classroom	**€2,275**
19 - 23 April 2027	Frankfurt	Classroom	**€2,175**
26 - 30 April 2027	Munich	Classroom	**€2,425**
10 - 14 May 2027	London	Classroom	**€2,915**

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Seminar dates

Available seminar dates

Live dates and pricing for Concrete Technology and Durability generated from the course details page.

Date	Location	Format	Fee
17 - 21 May 2027	Barcelona	Classroom	**€2,275**
24 - 28 May 2027	Frankfurt	Classroom	**€2,175**
3 - 7 May 2027	Paris	Classroom	**€2,810**
14 - 18 June 2027	London	Classroom	**€2,915**
21 - 25 June 2027	Barcelona	Classroom	**€2,275**
7 - 11 June 2027	Frankfurt	Classroom	**€2,175**
26 - 30 July 2027	London	Classroom	**€2,915**
5 - 9 July 2027	Barcelona	Classroom	**€2,275**
12 - 16 July 2027	Frankfurt	Classroom	**€2,175**
19 - 23 July 2027	Vienna	Classroom	**€3,425**

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Seminar dates

Available seminar dates

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Date	Location	Format	Fee
2 - 6 August 2027	London	Classroom	**€2,915**
9 - 13 August 2027	Barcelona	Classroom	**€2,275**
16 - 20 August 2027	Frankfurt	Classroom	**€2,175**
23 - 27 August 2027	Amsterdam	Classroom	**€3,215**
13 - 17 September 2027	London	Classroom	**€2,915**
20 - 24 September 2027	Barcelona	Classroom	**€2,275**
6 - 10 September 2027	Frankfurt	Classroom	**€2,175**
18 - 22 October 2027	London	Classroom	**€2,915**
25 - 29 October 2027	Barcelona	Classroom	**€2,275**
4 - 8 October 2027	Frankfurt	Classroom	**€2,175**

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Seminar dates

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Date	Location	Format	Fee
11 - 15 October 2027	Dubai	Classroom	**€2,845**
22 - 26 November 2027	London	Classroom	**€2,915**
1 - 5 November 2027	Barcelona	Classroom	**€2,275**
8 - 12 November 2027	Frankfurt	Classroom	**€2,175**
15 - 19 November 2027	Geneva	Classroom	**€3,315**
6 - 10 December 2027	London	Classroom	**€2,915**
13 - 17 December 2027	Barcelona	Classroom	**€2,275**
20 - 24 December 2027	Frankfurt	Classroom	**€2,175**
27 - 31 December 2027	Istanbul	Classroom	**€2,825**
14 - 18 December 2026	Online / Live	Online / Live	**€1,625**

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Available seminar dates

Live dates and pricing for Concrete Technology and Durability generated from the course details page.

Date	Location	Format	Fee
21 - 25 December 2026	Online / Live	Online / Live	**€1,625**
7 - 11 December 2026	Online / Live	Online / Live	**€1,625**
11 - 15 January 2027	Online / Live	Online / Live	**€1,625**
18 - 22 January 2027	Online / Live	Online / Live	**€1,625**
25 - 29 January 2027	Online / Live	Online / Live	**€1,625**
4 - 8 January 2027	Online / Live	Online / Live	**€1,625**
15 - 19 February 2027	Online / Live	Online / Live	**€1,625**
22 - 26 February 2027	Online / Live	Online / Live	**€1,625**
1 - 5 February 2027	Online / Live	Online / Live	**€1,625**
8 - 12 February 2027	Online / Live	Online / Live	**€1,625**

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Date	Location	Format	Fee
22 - 26 March 2027	Online / Live	Online / Live	**€1,625**
1 - 5 March 2027	Online / Live	Online / Live	**€1,625**
8 - 12 March 2027	Online / Live	Online / Live	**€1,625**
15 - 19 March 2027	Online / Live	Online / Live	**€1,625**
5 - 9 April 2027	Online / Live	Online / Live	**€1,625**
12 - 16 April 2027	Online / Live	Online / Live	**€1,625**
19 - 23 April 2027	Online / Live	Online / Live	**€1,625**
26 - 30 April 2027	Online / Live	Online / Live	**€1,625**
10 - 14 May 2027	Online / Live	Online / Live	**€1,625**
17 - 21 May 2027	Online / Live	Online / Live	**€1,625**

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24 - 28 May 2027	Online / Live	Online / Live	**€1,625**
3 - 7 May 2027	Online / Live	Online / Live	**€1,625**
14 - 18 June 2027	Online / Live	Online / Live	**€1,625**
21 - 25 June 2027	Online / Live	Online / Live	**€1,625**
7 - 11 June 2027	Online / Live	Online / Live	**€1,625**
26 - 30 July 2027	Online / Live	Online / Live	**€1,625**
5 - 9 July 2027	Online / Live	Online / Live	**€1,625**
12 - 16 July 2027	Online / Live	Online / Live	**€1,625**
19 - 23 July 2027	Online / Live	Online / Live	**€1,625**
2 - 6 August 2027	Online / Live	Online / Live	**€1,625**

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Date	Location	Format	Fee
9 - 13 August 2027	Online / Live	Online / Live	**€1,625**
16 - 20 August 2027	Online / Live	Online / Live	**€1,625**
23 - 27 August 2027	Online / Live	Online / Live	**€1,625**
13 - 17 September 2027	Online / Live	Online / Live	**€1,625**
20 - 24 September 2027	Online / Live	Online / Live	**€1,625**
6 - 10 September 2027	Online / Live	Online / Live	**€1,625**
18 - 22 October 2027	Online / Live	Online / Live	**€1,625**
25 - 29 October 2027	Online / Live	Online / Live	**€1,625**
4 - 8 October 2027	Online / Live	Online / Live	**€1,625**
11 - 15 October 2027	Online / Live	Online / Live	**€1,625**

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22 - 26 November 2027	Online / Live	Online / Live	**€1,625**
1 - 5 November 2027	Online / Live	Online / Live	**€1,625**
8 - 12 November 2027	Online / Live	Online / Live	**€1,625**
15 - 19 November 2027	Online / Live	Online / Live	**€1,625**
6 - 10 December 2027	Online / Live	Online / Live	**€1,625**
13 - 17 December 2027	Online / Live	Online / Live	**€1,625**
20 - 24 December 2027	Online / Live	Online / Live	**€1,625**
27 - 31 December 2027	Online / Live	Online / Live	**€1,625**