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CONSTRUCTION MANAGEMENT | CM-043

Tunnelling and Underground Construction Management

Contact

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Course content

Why Attend

Tunnels and underground structures for metros, roads, water, sewers, utilities and energy are among the most complex and risky construction projects. Ground uncertainty, groundwater, settlement of surrounding structures, confined working spaces and specialised equipment create technical, safety and commercial challenges that require careful planning and management.

This Tunnelling and Underground Construction Management training course provides a comprehensive overview of how underground projects are planned, procured, designed and delivered. Participants learn about ground investigation and characterisation, tunnelling methods including tunnel boring machines and sprayed concrete linings, shafts and caverns, ground movement and monitoring, safety in underground works and contractual risk allocation.

Course Methodology

• The course uses technical briefings, project case studies and practical exercises. Participants interpret ground investigation data, select tunnelling methods for scenarios, review monitoring results and discuss risk allocation on case study projects. Lessons from tunnelling incidents are examined throughout.

Course Objectives

• Explain the main types and purposes of underground construction

• Interpret ground investigation information for tunnelling decisions

• Compare tunnelling methods and their suitability for different ground

• Understand tunnel boring machine selection and operation in overview

• Manage shafts, caverns and sprayed concrete lining works

• Control ground movement and protect adjacent structures

Target Audience

• Project managers and construction managers in infrastructure

• Tunnel and geotechnical engineers

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- Client and owner representatives
- Design and consulting engineers

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Course outline

Detailed course outline

Day-by-day outline for Tunnelling and Underground Construction Management.

Day 1 - Underground Construction Overview

- 09:00-09:34 | Types and purposes of tunnels and underground structures
- 09:34-10:08 | Key stages of an underground project life cycle
- 10:08-10:42 | Distinctive risks of underground construction
- 10:42-11:00 | Lessons from major tunnelling projects and incidents
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Lessons from major tunnelling projects and incidents (continued)
- 11:46-12:20 | Stakeholders, permits and third-party interfaces
- 12:20-12:53 | Environmental and community considerations
- 12:53-14:00 | Exercise: identifying risks for a metro tunnel project

Day 2 - Ground Investigation and Characterisation

- 09:00-09:34 | Planning ground investigation for tunnels
- 09:34-10:08 | Soil and rock behaviour relevant to tunnelling
- 10:08-10:42 | Groundwater conditions and their effects
- 10:42-11:00 | Geotechnical baseline reports and their purpose
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Geotechnical baseline reports and their purpose (continued)
- 11:46-12:20 | Interpreting borehole logs and test results
- 12:20-12:53 | Dealing with ground uncertainty and contingency
- 12:53-14:00 | Workshop: interpreting ground investigation data

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Day 3 - Tunnelling Methods

- 09:00-09:34 | Tunnel boring machines and their types
- 09:34-10:08 | Earth pressure balance and slurry machines compared
- 10:08-10:42 | Sprayed concrete lining and sequential excavation
- 10:42-11:00 | Drill and blast tunnelling in rock
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Drill and blast tunnelling in rock (continued)
- 11:46-12:20 | Cut and cover and immersed tube methods
- 12:20-12:53 | Shafts, caverns and cross passages
- 12:53-14:00 | Exercise: selecting tunnelling methods for scenarios

Day 4 - Ground Movement, Monitoring and Safety

- 09:00-09:34 | Causes and prediction of ground settlement
- 09:34-10:08 | Protecting buildings, utilities and infrastructure nearby
- 10:08-10:42 | Instrumentation and monitoring systems
- 10:42-11:00 | Trigger levels and response plans
- 11:00-11:30 | Coffee break
- 11:30-11:46 | Trigger levels and response plans (continued)
- 11:46-12:20 | Safety in confined spaces and tunnel environments
- 12:20-12:53 | Ventilation, fire and emergency evacuation underground
- 12:53-14:00 | Case study: responding to excessive settlement

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Day 5 - Planning, Contracts and Delivery

- 09:00-09:39 | Programming and logistics for underground works
- 09:39-10:18 | Spoil handling, segment supply and site logistics
- 10:18-10:57 | Risk allocation and ground risk in tunnelling contracts
- 10:57-11:00 | Risk registers and joint risk management approaches
- 11:00-11:30 | Coffee break
- 11:30-12:06 | Risk registers and joint risk management approaches (continued)
- 12:06-12:44 | Commissioning and handover of underground assets
- 12:44-13:22 | Digital tools and innovations in tunnelling
- 13:22-14:00 | Personal action plan for underground construction

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Seminar dates

Available seminar dates

Live dates and pricing for Tunnelling and Underground Construction Management 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**
4 - 8 January 2027	London	Classroom	**€2,915**
11 - 15 January 2027	Barcelona	Classroom	**€2,275**
18 - 22 January 2027	Frankfurt	Classroom	**€2,175**
25 - 29 January 2027	Madrid	Classroom	**€3,400**
8 - 12 February 2027	London	Classroom	**€2,915**
15 - 19 February 2027	Barcelona	Classroom	**€2,275**
22 - 26 February 2027	Frankfurt	Classroom	**€2,175**

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Seminar dates

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Live dates and pricing for Tunnelling and Underground Construction Management generated from the course details page.

Date	Location	Format	Fee
1 - 5 February 2027	Munich	Classroom	**€2,425**
15 - 19 March 2027	London	Classroom	**€2,915**
22 - 26 March 2027	Barcelona	Classroom	**€2,275**
1 - 5 March 2027	Frankfurt	Classroom	**€2,175**
8 - 12 March 2027	Paris	Classroom	**€2,810**
26 - 30 April 2027	London	Classroom	**€2,915**
5 - 9 April 2027	Barcelona	Classroom	**€2,275**
12 - 16 April 2027	Frankfurt	Classroom	**€2,175**
19 - 23 April 2027	Rome	Classroom	**€2,830**
3 - 7 May 2027	London	Classroom	**€2,915**

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Seminar dates

Available seminar dates

Live dates and pricing for Tunnelling and Underground Construction Management generated from the course details page.

Date	Location	Format	Fee
10 - 14 May 2027	Barcelona	Classroom	**€2,275**
17 - 21 May 2027	Frankfurt	Classroom	**€2,175**
24 - 28 May 2027	Vienna	Classroom	**€3,425**
14 - 18 June 2027	London	Classroom	**€2,915**
21 - 25 June 2027	Barcelona	Classroom	**€2,275**
7 - 11 June 2027	Frankfurt	Classroom	**€2,175**
19 - 23 July 2027	London	Classroom	**€2,915**
26 - 30 July 2027	Barcelona	Classroom	**€2,275**
5 - 9 July 2027	Frankfurt	Classroom	**€2,175**
12 - 16 July 2027	Cape Town	Classroom	**€1,825**

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Seminar dates

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Live dates and pricing for Tunnelling and Underground Construction Management generated from the course details page.

Date	Location	Format	Fee
23 - 27 August 2027	London	Classroom	**€2,915**
2 - 6 August 2027	Barcelona	Classroom	**€2,275**
9 - 13 August 2027	Frankfurt	Classroom	**€2,175**
16 - 20 August 2027	Dubai	Classroom	**€2,845**
13 - 17 September 2027	London	Classroom	**€2,915**
20 - 24 September 2027	Barcelona	Classroom	**€2,275**
6 - 10 September 2027	Frankfurt	Classroom	**€2,175**
11 - 15 October 2027	London	Classroom	**€2,915**
18 - 22 October 2027	Barcelona	Classroom	**€2,275**
25 - 29 October 2027	Frankfurt	Classroom	**€2,175**

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Live dates and pricing for Tunnelling and Underground Construction Management generated from the course details page.

Date	Location	Format	Fee
4 - 8 October 2027	Istanbul	Classroom	**€2,825**
15 - 19 November 2027	London	Classroom	**€2,915**
22 - 26 November 2027	Barcelona	Classroom	**€2,275**
1 - 5 November 2027	Frankfurt	Classroom	**€2,175**
8 - 12 November 2027	Kuala lumpur	Classroom	**€2,425**
27 - 31 December 2027	London	Classroom	**€2,915**
6 - 10 December 2027	Barcelona	Classroom	**€2,275**
13 - 17 December 2027	Frankfurt	Classroom	**€2,175**
20 - 24 December 2027	Madrid	Classroom	**€3,400**
14 - 18 December 2026	Online / Live	Online / Live	**€1,625**

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Date	Location	Format	Fee
21 - 25 December 2026	Online / Live	Online / Live	**€1,625**
7 - 11 December 2026	Online / Live	Online / Live	**€1,625**
4 - 8 January 2027	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**
8 - 12 February 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**

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Date	Location	Format	Fee
15 - 19 March 2027	Online / Live	Online / Live	**€1,625**
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**
26 - 30 April 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**
3 - 7 May 2027	Online / Live	Online / Live	**€1,625**
10 - 14 May 2027	Online / Live	Online / Live	**€1,625**

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17 - 21 May 2027	Online / Live	Online / Live	**€1,625**
24 - 28 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**
19 - 23 July 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**
23 - 27 August 2027	Online / Live	Online / Live	**€1,625**

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2 - 6 August 2027	Online / Live	Online / Live	**€1,625**
9 - 13 August 2027	Online / Live	Online / Live	**€1,625**
16 - 20 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**
11 - 15 October 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**

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15 - 19 November 2027	Online / Live	Online / Live	**€1,625**
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**
27 - 31 December 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**