

Consulting and Training | Reach New Heights

Course Name

Highway Design and Planning

Sector Name

Civil Engineering

Document Type

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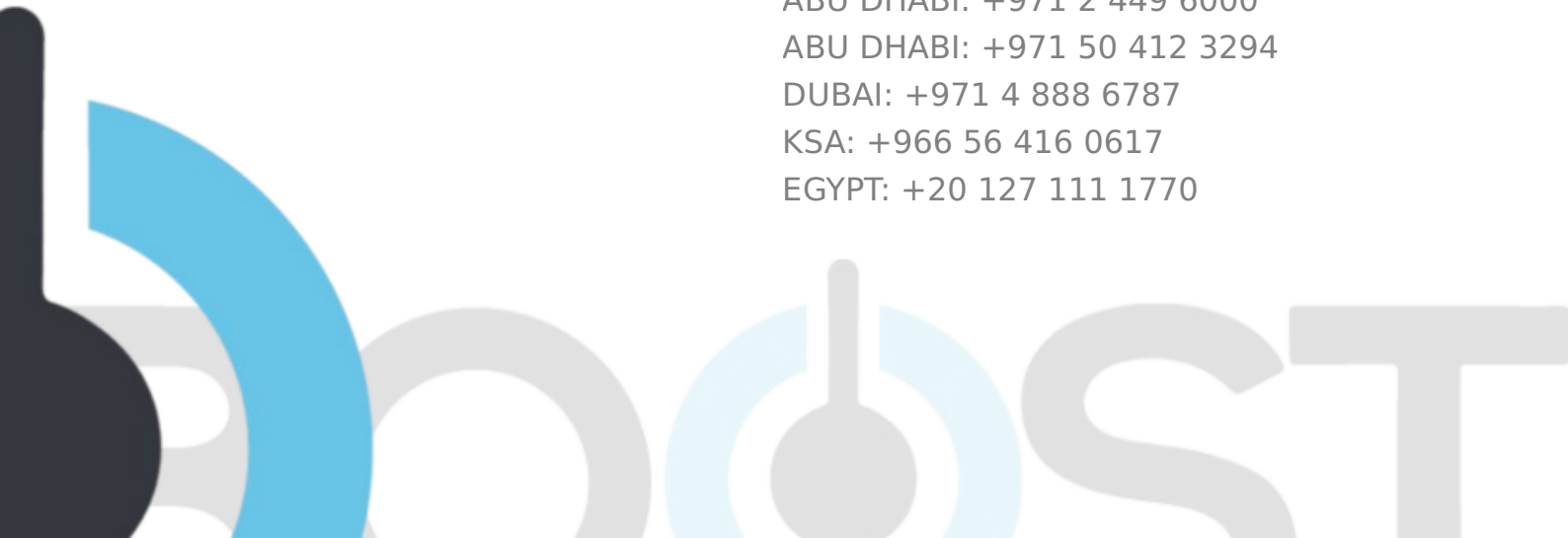
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Highway Design and Planning

Course Introduction

Highway design and planning

Highway design and planning play a crucial role in shaping modern transportation systems. Effective highway design ensures safety, efficiency, and sustainability while meeting the needs of growing populations and expanding economies.

This course provides a comprehensive understanding of the principles, methodologies, and tools used in highway design and planning.

Participants will explore key topics such as geometric design, traffic engineering, pavement materials, environmental considerations, and highway maintenance. Through practical exercises and case studies, this course aims to equip participants with the skills to design and plan highways that align with global standards and local requirements.

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Target Audience

- ✓ Civil engineers.
- ✓ Experienced Civil Engineers Seeking Professional Development

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Highway Design and Planning

Learning Objectives

- ✓ Understand the principles and standards of highway design and planning.
- ✓ Analyze traffic and transportation needs for efficient highway systems.
- ✓ Design highway components, including horizontal and vertical alignments, cross-sections, and intersections.
- ✓ Assess the environmental and socioeconomic impacts of highway projects.
- ✓ Integrate sustainability and safety considerations into highway design and planning.
- ✓ Utilize modern tools and software for highway design and planning.

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Highway Design and Planning

Course Outline

✓ DAY 01

Fundamentals of Highway Design and Planning

- ✓ Introduction to highway systems and their significance in transportation
- ✓ Principles of highway planning and design

Key elements of highway design:

- ✓ Functional classification of highways
- ✓ Design controls and criteria
- ✓ Overview of highway design standards (e.g., AASHTO, IRC)
- ✓ Case studies: Successful highway projects

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Course Outline

✓ Day 02

Geometric Design of Highways

- ✓ **Horizontal alignment:** Curves, super elevation, and sight distance
- ✓ **Vertical alignment:** Gradients, vertical curves, and elevation considerations
- ✓ **Cross-sectional elements:** Lane width, shoulders, medians, and side slopes
- ✓ **Intersection and interchange design:** Types and considerations
- ✓ **Practical session:** Designing geometric components using design software

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Course Outline

✓ Day 03

Traffic Engineering in Highway Design

- ✓ Traffic flow theory and analysis
- ✓ Traffic surveys and data collection techniques
- ✓ Capacity analysis and level of service (LOS)
- ✓ Design of traffic control devices: Signs, signals, and markings
- ✓ Road safety audits and crash analysis
- ✓ **Practical session:** Traffic flow analysis for highway design

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Course Outline

✓ Day 04

Pavement Design and Construction

- ✓ Introduction to pavement materials and types (flexible and rigid pavements)
- ✓ **Design of pavement layers:** Subgrade, base, and surface courses
- ✓ Pavement performance and evaluation methods
- ✓ Pavement maintenance and rehabilitation techniques
- ✓ Sustainable practices in pavement construction
- ✓ **Practical session:** Pavement design using software (e.g., MX Road, Civil 3D)

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Course Outline

✓ Day 05

Environmental, Social, and Technological Considerations

- ✓ Environmental impact assessment for highway projects
- ✓ **Mitigating environmental impacts:** Noise barriers, green corridors, and runoff management
- ✓ Socioeconomic impacts of highway development
- ✓ Integration of Intelligent Transportation Systems (ITS) in highway planning
- ✓ **Future trends:** Smart highways and sustainable infrastructure
- ✓ **Final project:** Designing a conceptual highway system for a real-world scenario
- ✓ Course review and participant feedback

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Sept. 21, 2026	Sept. 25, 2026	5 days	4250.00 \$	UAE , Dubai
Nov. 30, 2026	Dec. 4, 2026	5 days	4250.00 \$	UAE , Abu Dhabi
April 4, 2027	April 8, 2027	5 days	4250.00 \$	KSA , Riyadh
June 28, 2027	July 2, 2027	5 days	4250.00 \$	UAE , Dubai

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