AMERICAN GLOBAL INSTITUTE FOR PRIVATE TRAINING

External Training Course

Mastering Construction Project Management Using AI Tools

From 18 Aug. To 22 Aug. 2025
From 22 Sep. To 26 Sep. 2025
From 27 Oct. To 31 Oct. 2025

Hotel Palma Bellver Affiliated by Meliá
Palma de Mallorca, Spain

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External Training Course:

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Course Overview:

In today's competitive and technology-driven construction industry, integrating Artificial Intelligence (AI) is no longer optional – it is a strategic necessity. This intensive 5-day course is designed to equip construction professionals with a comprehensive understanding of how AI can transform every aspect of project management, from planning and design to execution, cost control, risk management, and quality assurance. Participants will explore the core concepts of AI, gain exposure to cutting-edge AI tools and platforms applicable to construction, and develop practical skills to apply AI for optimized scheduling, predictive cost estimation, resource management, and safety monitoring. Through real-world case studies, interactive discussions, and hands-on sessions, attendees will learn how to leverage AI to enhance decision-making, improve efficiency, minimize delays, reduce costs, and achieve superior project outcomes. The course will also address strategic leadership aspects of AI adoption, including building AI-ready teams, managing organizational change, and preparing for the emerging AI trends shaping the construction sector's future. By the end of this program, participants will be well-positioned to drive innovation and lead AI initiatives confidently within their projects and organizations.

Target Audience:

Construction Project Managers.
Construction Engineers & Planners.
Cost Engineers & Estimators.
Site Managers & Supervisors.
Project Control Professionals.
Construction Technology Managers.
Anyone involved in managing, planning, or supervising construction projects seeking to adopt AI solutions.

Key Learning Objectives:

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

- Explain AI fundamentals and their relevance to construction project management.
- Identify AI tools and technologies suitable for different project management functions.
- Integrate AI into planning, scheduling, and resource allocation processes.
- Apply AI for budget forecasting, cost optimization, and controlling overruns.
- Utilize AI for proactive risk assessment and mitigation.
- Implement AI-based quality assurance and safety monitoring practices.
- Lead and manage AI integration projects within construction organizations.
- Strategically plan for AI adoption to drive innovation and competitiveness.

Training Methodology:

Expert-led interactive lectures.
Real-world case study analyses.
Hands-on practical sessions with AI tools.
Group exercises and solution development workshops.
Final project presentation and peer review.

Course Content Outline:

Day 1: Introduction to AI in Construction Project Management

Understanding AI Fundamentals:

- AI, Machine Learning, Deep Learning, Computer Vision.
- Differences between AI and traditional automation.

Applications of AI in Construction:

- AI for design optimization, progress tracking, and reporting.

Benefits & Challenges:

- Improving safety, quality, and productivity.
- Key barriers to AI adoption in construction companies.

Global Case Studies:

- Successful AI integration in mega projects.
- Lessons learned from AI implementation failures.

AI Ethics & Legal Considerations:

- Data privacy, security, and ethical implications.

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Day 2: AI Tools for Project Planning & Scheduling

AI Applications in Scheduling:

- Automated schedule generation and optimization.
- Sequencing construction activities using AI algorithms.

Integration with Existing Tools:

- AI with Primavera P6 and MS Project.
- Enhancing BIM models with AI analytics.

Machine Learning for Predictive Scheduling:

- Forecasting project delays and reworks.
- Leveraging historical data for planning accuracy.

Hands-on Session:

- Demo and practice with AI-based scheduling platforms.

Discussion:

- Overcoming integration challenges and resistance.

Day 3: AI for Cost Control & Budget Optimization

AI-Based Cost Estimation Techniques:

- Automated quantity take-offs and cost predictions.

Forecasting Models:

- AI-driven dynamic budget forecasting.
- Real-time cost monitoring with AI dashboards.

Managing Cost Overruns:

- Early warning systems and root cause analysis.

Supply Chain Optimization:

- Supplier selection and inventory management using AI.

Practical Exercises:

- AI budgeting tools applied to sample projects.

Day 4: AI for Risk Management & Quality Assurance

Risk Identification & Mitigation:

- Predictive analytics for risk assessments.
- AI for safety hazard prediction.

AI in Safety Monitoring:

- Computer vision for site compliance.
- Wearable AI technologies for worker health and safety.

Quality Assurance Applications:

- Defect detection with AI image recognition.
- Maintaining construction standards via AI data analysis.

Workshop:

- Developing AI-based risk management and quality frameworks.

Day 5: Implementing AI in Construction Projects – Strategy & Leadership

AI Implementation Roadmap:

- Steps to integrate AI tools effectively.
- Identifying quick wins and long-term AI projects.

Change Management:

- Managing resistance and promoting AI adoption.
- Upskilling teams for AI readiness.

Building AI-Enabled Teams:

- Required competencies for AI projects.
- Collaboration between construction, IT, and data teams.

Final Group Project:

- AI solution presentation for a real or hypothetical project.
- Peer and instructor feedback.

Future Trends:

- Upcoming AI innovations in construction.
- Preparing for AI-driven transformation in project management.

(1st Day) Agenda

8.30	9.00	Opening Remarks (30 Min.).
9.00	11.30	DISCUSS COURSE OBJECTIVES: • Introduction to AI in Construction Project Management • AI Tools for Project Planning & Scheduling • AI for Cost Control & Budget Optimization • AI for Risk Management & Quality Assurance • Implementing AI in Construction Projects – Strategy & Leadership
11.30	12.00	Coffee Break
12.00	14.00	Introduction to AI in Construction Project Management: • Understanding AI Fundamentals: o AI, Machine Learning, Deep Learning, Computer Vision. o Differences between AI and traditional automation. • Applications of AI in Construction: o AI for design optimization, progress tracking, and reporting. • Benefits & Challenges: o Improving safety, quality, and productivity. o Key barriers to AI adoption in construction companies. • Global Case Studies: o Successful AI integration in mega projects. o Lessons learned from AI implementation failures. • AI Ethics & Legal Considerations: o Data privacy, security, and ethical implications.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(2nd Day) Agenda

9.00	11.30	AI Tools for Project Planning & Scheduling: • AI Applications in Scheduling: o Automated schedule generation and optimization. o Sequencing construction activities using AI algorithms. • Integration with Existing Tools: o AI with Primavera P6 and MS Project. o Enhancing BIM models with AI analytics.
11.30	12.00	Coffee Break
12.00	14.00	AI Tools for Project Planning & Scheduling: • Machine Learning for Predictive Scheduling: o Forecasting project delays and reworks. o Leveraging historical data for planning accuracy. • Hands-on Session: o Demo and practice with AI-based scheduling platforms. • Discussion: o Overcoming integration challenges and resistance.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(3rd Day) Agenda

9.00	11.30	AI for Cost Control & Budget Optimization: • AI-Based Cost Estimation Techniques: o Automated quantity take-offs and cost predictions. • Forecasting Models: o AI-driven dynamic budget forecasting. o Real-time cost monitoring with AI dashboards.
11.30	12.00	Coffee Break
12.00	14.00	AI for Cost Control & Budget Optimization: • Managing Cost Overruns: o Early warning systems and root cause analysis. • Supply Chain Optimization: o Supplier selection and inventory management using AI. • Practical Exercises: o AI budgeting tools applied to sample projects.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(4th Day) Agenda

9.00	11.30	AI for Risk Management & Quality Assurance: • Risk Identification & Mitigation: o Predictive analytics for risk assessments. o AI for safety hazard prediction. • AI in Safety Monitoring: o Computer vision for site compliance. o Wearable AI technologies for worker health and safety.
11.30	12.00	Coffee Break
12.00	14.00	AI for Risk Management & Quality Assurance: • Quality Assurance Applications: o Defect detection with AI image recognition. o Maintaining construction standards via AI data analysis. • Workshop: o Developing AI-based risk management and quality frameworks.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(5th Day) Agenda

9.00	11.30	Implementing AI in Construction Projects – Strategy & Leadership: • AI Implementation Roadmap: o Steps to integrate AI tools effectively. o Identifying quick wins and long-term AI projects. • Change Management: o Managing resistance and promoting AI adoption. o Upskilling teams for AI readiness. • Building AI-Enabled Teams: o Required competencies for AI projects. o Collaboration between construction, IT, and data teams.
11.30	12.00	Coffee Break
12.00	14.00	Implementing AI in Construction Projects – Strategy & Leadership: • Final Group Project: o AI solution presentation for a real or hypothetical project. o Peer and instructor feedback. • Future Trends: o Upcoming AI innovations in construction. o Preparing for AI-driven transformation in project management.
14.00	14.30	Questions, Discussion & Conclusion Training Course.
14.30		Buffet Lunch