AI in Construction Planning Training Course

Professional Development Training Course Outline

Category	Architectural Engineering	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Artificial Intelligence is rapidly transforming the construction industry, bringing data-driven decision-making, predictive analytics, automation, and digital transformation into construction planning. Modern projects demand higher efficiency, reduced costs, and improved safety standards this is where AI-powered construction planning tools, machine learning algorithms, BIM integration, and smart scheduling systems play a critical role. By leveraging real-time data insights, risk prediction models, and intelligent resource allocation, construction professionals can significantly enhance project outcomes while minimizing delays and cost overruns.

AI in Construction Planning Training Course is designed to equip professionals with cutting-edge knowledge of AI applications, digital twins, generative design, and advanced analytics in construction workflows. Participants will gain hands-on experience with AI-based project scheduling, cost estimation, risk management, and automation tools, enabling them to lead the shift toward smart construction, sustainable infrastructure, and Industry 4.0 practices.

Programme Curriculum

AI in Construction Planning Training Course

Introduction

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Course Duration

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Course Objectives

1. Understand AI fundamentals in construction planning and management
2. Apply machine learning algorithms for project forecasting and scheduling
3. Implement AI-driven cost estimation and budget optimization techniques
4. Utilize predictive analytics for risk mitigation and delay prevention
5. Integrate Building Information Modeling (BIM) with AI technologies
6. Enhance resource allocation using intelligent automation tools
7. Analyze big data in construction for improved decision-making
8. Develop AI-powered project timelines and smart scheduling systems
9. Explore digital twins for real-time construction monitoring
10. Improve construction safety using AI-based hazard detection systems
11. Implement generative design for optimized construction planning
12. Leverage cloud-based AI platforms for collaboration and scalability
13. Understand future trends like robotics, IoT, and autonomous construction systems

Target Audience

1. Construction Project Managers
2. Civil Engineers and Site Engineers
3. Planning and Scheduling Engineers
4. Architects and Design Professionals
5. BIM Engineers and Modelers
6. Quantity Surveyors and Cost Engineers
7. Infrastructure Consultants and Contractors
8. Students and Researchers in Construction Technology

Course Modules

Module 1: Introduction to AI in Construction

- Overview of AI in construction industry
- Key concepts: ML, NLP, Computer Vision
- Benefits of AI in planning
- Industry challenges and opportunities
- *Case Study:* AI adoption in mega infrastructure projects

Module 2: Data-Driven Construction Planning

- Importance of data in construction
- Data collection and preprocessing
- Big data analytics tools

- Data visualization techniques
- *Case Study:* Data-driven project optimization

Module 3: Machine Learning for Project Forecasting

- Supervised vs unsupervised learning
- Forecasting project timelines
- Regression models in construction
- AI-based productivity prediction
- *Case Study:* ML model for delay prediction

Module 4: AI in Project Scheduling

- Smart scheduling techniques
- AI-based critical path analysis
- Automation in scheduling
- Real-time schedule updates
- *Case Study:* AI scheduling reducing delays

Module 5: Cost Estimation using AI

- AI-driven quantity takeoff
- Predictive cost modeling
- Budget optimization strategies
- Cost overrun prevention
- *Case Study:* AI reducing estimation errors

Module 6: Risk Management with Predictive Analytics

- Risk identification using AI
- Predictive risk models
- Scenario analysis
- Risk mitigation strategies
- *Case Study:* AI predicting project risks

Module 7: BIM and AI Integration

- BIM fundamentals
- AI integration with BIM
- Clash detection using AI
- Workflow automation
- *Case Study:* BIM-AI synergy in projects

Module 8: Resource Optimization

- AI-based resource allocation
- Workforce optimization
- Equipment utilization
- Productivity tracking
- *Case Study:* AI improving labor efficiency

Module 9: Digital Twins in Construction

- Concept of digital twins
- Real-time monitoring
- Simulation and forecasting
- Lifecycle management
- *Case Study:* Digital twin for smart infrastructure

Module 10: AI for Construction Safety

- Hazard detection using AI
- Computer vision applications
- Safety analytics
- Incident prediction
- *Case Study:* AI reducing workplace accidents

Module 11: Generative Design and Optimization

- AI-driven design solutions
- Design automation tools
- Optimization techniques
- Sustainable construction planning
- *Case Study:* Generative design in architecture

Module 12: AI Tools and Platforms

- Overview of AI software
- Cloud-based AI tools
- Integration with construction systems
- Tool comparison and selection
- *Case Study:* Implementation of AI platforms

Module 13: IoT and Smart Construction

- IoT in construction planning
- Sensor data integration
- Smart site management
- Real-time monitoring systems
- *Case Study:* IoT-enabled construction site

Module 14: Robotics and Automation

- Construction robotics overview
- Automation in site operations
- AI-powered machinery
- Future of autonomous construction
- *Case Study:* Robotics improving productivity

Module 15: Future Trends and Implementation Strategy

- Emerging AI trends
- Industry 4.0 in construction
- Implementation roadmap
- Challenges and solutions

- *Case Study:* AI transformation strategy

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com