4D & 5D Construction Simulation 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

4D & 5D Construction Simulation Training Course is designed to equip professionals with cutting-edge skills in Building Information Modeling (BIM), digital construction planning, and cost-integrated project simulation. By combining time (4D scheduling) and cost (5D estimation) dimensions with 3D models, this course empowers participants to optimize project workflows, enhance clash detection, resource allocation, and construction sequencing, and drive data-driven decision-making. Learners will gain hands-on experience with industry-relevant tools and real-world scenarios, ensuring mastery of virtual construction, project visualization, and lifecycle management.

In today's rapidly evolving AEC (Architecture, Engineering, and Construction) industry, organizations demand professionals skilled in digital twins, AI-driven construction analytics, and integrated project delivery (IPD). This training focuses on automation, predictive modeling, sustainability analysis, and cost optimization, enabling participants to reduce project risks, improve collaboration, and deliver projects on time and within budget. The course bridges the gap between theory and practice through interactive simulations, case studies, and real-time project integration, preparing learners for future-ready construction environments.

Programme Curriculum

4D & 5D Construction Simulation Training Course

Introduction

4D & 5D Construction Simulation Training Course is designed to equip professionals with cutting-edge skills in Building Information Modeling (BIM), digital construction planning, and cost-integrated project simulation. By combining time (4D scheduling) and cost (5D estimation) dimensions with 3D models, this course empowers participants to optimize project workflows, enhance clash detection, resource allocation, and construction

sequencing, and drive data-driven decision-making. Learners will gain hands-on experience with industry-relevant tools and real-world scenarios, ensuring mastery of virtual construction, project visualization, and lifecycle management.

In today's rapidly evolving AEC (Architecture, Engineering, and Construction) industry, organizations demand professionals skilled in digital twins, AI-driven construction analytics, and integrated project delivery (IPD). This training focuses on automation, predictive modeling, sustainability analysis, and cost optimization, enabling participants to reduce project risks, improve collaboration, and deliver projects on time and within budget. The course bridges the gap between theory and practice through interactive simulations, case studies, and real-time project integration, preparing learners for future-ready construction environments.

Course Duration

10 days

Course Objectives

1. Master 4D scheduling and simulation using advanced BIM tools
2. Develop expertise in 5D cost estimation and quantity takeoff automation
3. Understand digital construction workflows and project lifecycle management
4. Apply clash detection and coordination strategies in complex projects
5. Integrate AI-powered construction analytics and predictive planning
6. Enhance resource optimization and construction sequencing techniques
7. Implement real-time project tracking and performance monitoring
8. Learn risk management and delay mitigation strategies
9. Utilize cloud-based BIM collaboration platforms
10. Explore digital twin technology for construction simulation
11. Improve sustainability analysis and green building cost planning
12. Gain proficiency in data-driven decision-making and reporting dashboards
13. Align construction practices with Industry 4.0 and smart construction trends

Target Audience

- BIM Engineers & BIM Modelers
- Project Managers & Construction Managers
- Civil Engineers & Structural Engineers
- Quantity Surveyors & Cost Engineers
- Architects & Design Consultants
- Planning Engineers & Schedulers
- Contractors & Site Engineers
- Students and Graduates in AEC disciplines

Course Modules

Module 1: Introduction to BIM & Digital Construction

- BIM fundamentals and evolution
- 3D to 5D transformation
- Industry standards and workflows
- Benefits of digital construction
- Case Study: BIM adoption in large infrastructure projects

Module 2: 3D Modeling for Simulation

- Model creation best practices
- Data-rich modeling techniques
- Interoperability standards
- Model validation
- Case Study: High-rise building 3D model development

Module 3: 4D Construction Scheduling

- Linking schedule with 3D models
- Time-based simulation techniques
- Construction sequencing
- Gantt chart integration
- Case Study: Metro rail project scheduling

Module 4: 5D Cost Estimation

- Quantity takeoff automation
- Cost database integration
- Budget forecasting
- Cost control strategies
- Case Study: Commercial building cost optimization

Module 5: BIM Tools & Software

- Overview of leading BIM software
- Navisworks, Synchro, Primavera integration
- Workflow automation
- Data exchange formats
- Case Study: Multi-platform BIM coordination

Module 6: Clash Detection & Coordination

- Clash detection techniques
- Coordination workflows
- Issue tracking systems
- Conflict resolution
- Case Study: Hospital project coordination

Module 7: Construction Sequencing

- Workflow planning
- Resource scheduling
- Equipment allocation
- Timeline optimization
- Case Study: Highway construction sequencing

Module 8: Resource Management

- Labor and material planning
- Productivity analysis

- Resource leveling
- Optimization techniques
- Case Study: Industrial plant resource allocation

Module 9: Risk Management in Simulation

- Risk identification
- Delay analysis
- Mitigation planning
- Scenario simulation
- Case Study: Delayed project recovery plan

Module 10: Digital Twin & Smart Construction

- Digital twin concepts
- IoT integration
- Real-time monitoring
- Predictive analytics
- Case Study: Smart city development

Module 11: Sustainability & Green Construction

- Energy modeling
- Sustainable materials
- Lifecycle cost analysis
- Environmental impact assessment
- Case Study: LEED-certified building

Module 12: Cloud Collaboration & Data Management

- Cloud-based BIM platforms
- Data sharing protocols
- Version control
- Cybersecurity basics
- Case Study: Remote project collaboration

Module 13: AI & Automation in Construction

- AI applications in BIM
- Machine learning for prediction
- Automation workflows
- Robotics in construction
- Case Study: AI-driven project planning

Module 14: Reporting & Visualization

- Dashboard creation
- Data visualization tools
- KPI tracking
- Stakeholder communication
- Case Study: Executive reporting system

Module 15: Capstone Project (4D & 5D Simulation)

- End-to-end project simulation
- Schedule and cost integration
- Presentation and evaluation
- Industry review feedback
- Case Study: Real-world integrated construction project

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
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