Parametric BIM Modeling 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

Parametric BIM Modeling is revolutionizing the Architecture, Engineering, and Construction (AEC) industry by enabling data-driven, rule-based, and intelligent 3D modeling workflows. Parametric BIM Modeling Training Course is designed to equip learners with cutting-edge skills in computational design, algorithmic modeling, and parametric optimization using industry-leading tools such as Revit, Dynamo, Grasshopper, and BIM-integrated platforms. The focus is on building adaptive building systems that respond dynamically to design changes, improving efficiency, accuracy, and sustainability in modern construction projects.

With the rise of Industry 4.0, Digital Twin technology, and AI-driven construction automation, Parametric BIM has become a critical skill for architects, engineers, and BIM professionals. This course emphasizes real-world applications, enabling participants to create intelligent building components, automate repetitive tasks, and optimize structural and environmental performance. Learners will gain hands-on experience in delivering high-performance BIM models aligned with global AEC standards such as ISO 19650 and lean construction methodologies.

Programme Curriculum

Parametric BIM Modeling Training Course

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Course Duration

10 days

Course Objectives

1. Master Parametric BIM workflows for smart construction modeling
2. Develop algorithmic design thinking using Grasshopper & Dynamo
3. Implement Generative Design strategies for optimized architecture
4. Build Data-driven BIM models for intelligent decision-making
5. Apply Digital Twin concepts in construction lifecycle management
6. Automate workflows using Revit API & Dynamo scripting
7. Enhance Sustainable design optimization (Green BIM)
8. Integrate AI-powered BIM automation techniques
9. Develop Clash detection & coordination models
10. Optimize structural systems using parametric engineering tools
11. Improve project efficiency through Lean BIM methodologies
12. Create cloud-based collaborative BIM environments
13. Align projects with ISO 19650 BIM standards & global practices

Target Audience

- Architecture students & professionals
- Structural & civil engineers
- MEP engineers and designers
- BIM coordinators & managers
- Urban planners & landscape designers
- Construction project managers
- CAD technicians transitioning to BIM
- Digital design & computational design enthusiasts

Course Modules

Module 1: Introduction to Parametric BIM

- BIM evolution and digital transformation
- Parametric vs traditional modeling
- Industry applications in AEC
- Introduction to Revit + Dynamo ecosystem
- Case Study: Smart residential tower design

Module 2: Computational Design Fundamentals

- Algorithmic thinking principles
- Nodes, graphs, and data structures

- Grasshopper interface basics
- Parametric logic building
- Case Study: Parametric façade system

Module 3: Revit Advanced Modeling

- Advanced family creation
- Adaptive components
- Nested families
- Parametric constraints
- Case Study: Modular hospital design

Module 4: Dynamo for BIM Automation

- Visual programming basics
- Data input/output workflows
- Automation scripts creation
- Revit-Dynamo integration
- Case Study: Automated door scheduling system

Module 5: Generative Design in BIM

- Design optimization principles
- Multi-variant design generation
- Performance-based design selection
- AI-assisted design exploration
- Case Study: Stadium seating optimization

Module 6: Structural Parametric Modeling

- Parametric truss systems
- Load-based optimization
- Structural adaptation modeling
- Revit Structure integration
- Case Study: Long-span bridge system

Module 7: MEP Parametric Systems

- HVAC parametric routing
- Electrical system automation
- Plumbing system optimization
- Clash-free coordination
- Case Study: Smart hospital MEP layout

Module 8: BIM Data Management

- BIM data structuring
- Parameter mapping
- Shared parameters usage
- Data extraction & reporting
- Case Study: Airport terminal data model

Module 9: Digital Twin Integration

- Real-time BIM synchronization
- IoT integration basics
- Lifecycle simulation
- Predictive maintenance modeling
- Case Study: Smart city infrastructure

Module 10: AI in BIM Workflows

- Machine learning in design
- Predictive modeling systems
- AI-based clash detection
- Smart automation tools
- Case Study: AI-optimized office tower

Module 11: Parametric Facade Design

- Adaptive façade systems
- Environmental response modeling
- Solar optimization techniques
- Kinetic façade systems
- Case Study: Responsive skyscraper envelope

Module 12: Cloud BIM Collaboration

- BIM 360 workflows
- Multi-user collaboration
- Version control systems
- Real-time coordination
- Case Study: Global airport project coordination

Module 13: Construction Simulation

- 4D BIM scheduling
- 5D cost integration
- Construction sequencing
- Risk simulation modeling
- Case Study: Mega infrastructure project

Module 14: Sustainability & Green BIM

- Energy modeling integration
- Carbon footprint analysis
- Eco-material optimization
- Passive design strategies
- Case Study: Net-zero commercial building

Module 15: Capstone Project – Smart Parametric Building

- End-to-end BIM workflow
- Full parametric system design

- Multi-disciplinary integration
- Real-world project simulation
- Case Study: Intelligent smart city building system

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

Start Date	End Date	Location	Price
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:

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