

Building Performance Analysis and Sustainable BIM with Autodesk Forma & Revit

Target Audience

This course is designed for professionals and students seeking to integrate sustainability and performance-driven decision-making into the architectural design process. It is suitable for:

- Architects and Architectural Designers
- BIM Engineers, BIM Coordinators, and BIM Managers
- Sustainable Design and Building Performance Consultants
- Urban Designers and Master Planning Professionals
- Revit and Autodesk Forma users looking to expand into performance analysis
- AEC professionals involved in conceptual design and environmental analysis
- Engineering and Architecture students interested in sustainable BIM workflows

Course Objectives

Upon completion of this course, participants will be able to:

- Understand the principles of outcome-based BIM and sustainable building design.
- Create conceptual site and building models using Autodesk Forma Site Design.
- Evaluate environmental performance during early-stage design using integrated analysis tools.
- Integrate Autodesk Revit with Autodesk Insight for building performance simulation.
- Perform operational energy and embodied carbon analysis to support sustainability goals.
- Compare design alternatives using performance dashboards and data-driven workflows.
- Apply industry best practices for low-carbon, high-performance building design.

Course Outcomes

After successfully completing this course, participants will be able to:

- Explain the concepts of outcome-based BIM and performance-driven design.
- Develop conceptual site designs using Autodesk Forma Site Design.
- Perform daylight, wind, noise, and microclimate analyses to optimize site layouts.
- Create and analyze Energy Analysis Models (EAM) within Autodesk Revit.
- Run EnergyPlus simulations using Autodesk Insight.

- Evaluate operational energy consumption and embodied carbon impacts.
- Compare multiple design scenarios using Insight dashboards.
- Make informed design decisions based on measurable sustainability metrics.
- Integrate conceptual and detailed BIM workflows for improved project performance.
- Apply Autodesk's cloud-based sustainability tools throughout the building lifecycle.

Course Outline

The course comprises **8 hours of theory and lab sessions** and is divided into **8 comprehensive modules**. Each module is followed by practical exercises and real-world site development workflows designed to reinforce learning and evaluate the participant's understanding of the concepts covered.

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Module 1: Course Introduction

- Course Overview
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- Downloading Course Resources
- Learning Methodology
- Course Assessments and Challenge Exercises

Module 2: Outcome-Based BIM & Sustainable Design Foundations

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- Evolution of Sustainable Building Design
- Data-Driven Design Principles
- Environmental Performance Metrics
- Low-Carbon Design Strategies
- Carbon Reduction in Building Projects
- Business Value of Sustainable Design
- Industry Trends and Future of Performance-Based Design

Module 3: Autodesk Forma Site Design Fundamentals

- Introduction to Autodesk Forma
- User Interface and Navigation
- Project Setup and Site Configuration

- Creating New Forma Projects
- Importing Site Context
- Working with Massing Models
- Contextual Data and Site Intelligence
- Building Metrics and Design Evaluation
- Hands-on Exercise: Conceptual Site Design

Module 4: Environmental Performance Analysis with Autodesk Forma

- Introduction to Environmental Analysis
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- Wind Flow Simulation
- Traffic Noise Analysis
- Microclimate Assessment
- Interpreting Analysis Results
- Optimizing Site Design Using Performance Data
- Hands-on Performance Analysis Challenge

Module 5: Performance-Driven Design Using Revit & Autodesk Insight

- Introduction to Building Performance Analysis
- Preparing Revit Models for Analysis
- Creating Energy Analysis Models (EAM)
- Exporting Models to Autodesk Insight
- EnergyPlus Simulation Workflow
- HVAC System Configuration
- Operational Energy Analysis
- Understanding Building Performance Results

Module 6: Embodied Carbon Analysis

- Introduction to Embodied Carbon
- Material Mapping from Revit
- Carbon Database Integration

- Lifecycle Assessment Concepts
- Embodied Carbon Calculations
- Carbon Reduction Strategies
- Comparing Material Alternatives

Module 7: Performance Dashboards & Design Optimization

- Autodesk Insight Dashboards
- Creating Performance Scenarios
- Comparing Design Alternatives
- Energy Use Intensity (EUI)
- Carbon Performance Metrics
- Sustainability Reporting
- Decision-Making Using Performance Data
- Design Optimization Techniques

Module 8: Integrated Sustainable BIM Workflow

- Connecting Forma, Revit, and Insight
- End-to-End Performance Workflow
- Iterative Design Process
- Best Practices for Sustainable BIM