

OpenBuildings Designer – Multidiscipline BIM Design and Analysis

Target Audience

This course is designed for architects, BIM modelers, structural engineers, MEP engineers, design coordinators, BIM managers, project engineers, and construction professionals involved in building design and documentation. It is also suitable for CAD professionals transitioning to BIM workflows and organizations implementing multidisciplinary digital design processes. The course benefits professionals seeking expertise in integrated building design, analysis, coordination, and project delivery using Bentley OpenBuildings Designer.

Course Objectives

Upon completion of this training, participants will be able to utilize OpenBuildings Designer to create, coordinate, analyze, and document multidisciplinary building projects within a BIM environment. The course aims to develop proficiency in architectural, structural, mechanical, and electrical modeling while leveraging computational design and energy analysis tools. Participants will learn to integrate project information, manage collaboration workflows, perform clash detection, and generate construction-ready documentation. The training also emphasizes BIM standards, digital project delivery, sustainability analysis, and visualization techniques.

Course Outcomes

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

1. Create and manage comprehensive BIM models using OpenBuildings Designer.
2. Develop architectural, structural, mechanical, and electrical building systems within a coordinated environment.
3. Perform multidisciplinary coordination and resolve clashes effectively.
4. Utilize computational design tools to automate and optimize design workflows.
5. Conduct building performance, daylight, solar, and energy analysis.
6. Apply BIM standards and ISO 19650-based information management practices.
7. Collaborate efficiently using ProjectWise and iTwin-enabled workflows.
8. Generate detailed drawings, schedules, reports, and project deliverables.
9. Produce high-quality visualizations, renderings, and stakeholder presentations.
10. Deliver complete BIM projects from conceptual design through construction documentation.

Course Outline

The course comprises **40 hours of theory and hands-on laboratory sessions** and is divided into **10 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.

Table of Contents

Module 1: Introduction to OpenBuildings Designer and BIM Fundamentals

- Overview of OpenBuildings Designer
- BIM Concepts and Building Design Workflows
- User Interface and Project Environment
- Design Standards and Workspaces
- Project Setup and Data Management

Module 2: Building Modeling Fundamentals

- 3D Modeling Environment
- Reference Files and Reality Models
- Grids, Levels, and Floor Management
- Building Organization and Model Structure
- Freeform Modeling Techniques

Module 3: Architectural Design and Space Planning

- Walls, Doors, and Windows
- Floor and Ceiling Systems
- Furniture and Interior Components
- Curtain Walls and Façade Design
- Space Planning and Validation
- Stairs, Handrails, and Openings

Module 4: Structural Modeling and Coordination

- Structural Design Fundamentals
- Steel Structure Modeling
- Concrete Structure Modeling
- Timber Structure Modeling
- Structural Libraries and Components
- Structural Quantification and Reporting

Module 5: Mechanical Systems Design

- HVAC System Modeling
- Ductwork Design and Sizing
- Plumbing System Modeling
- Piping System Design
- Air Handling Units
- Mechanical Coordination and Fabrication Data

Module 6: Electrical Systems Design

- Electrical Design Fundamentals
- Lighting Design Workflows
- Power Distribution Systems
- Cable Trays and Conduits
- Circuit Design and Routing
- Schedules, Labels, and Documentation

Module 7: Multidiscipline Coordination and BIM Collaboration

- Clash Detection and Resolution
- Federated Modeling Workflows
- ProjectWise Integration
- ISO 19650-Based Information Management
- iTwin Platform Collaboration
- Data Exchange and Interoperability

Module 8: Computational Design and Parametric Modeling

- Introduction to Computational Design
- Design Intent and Constraints
- Visual Programming Concepts
- Parametric Geometry Creation
- Reusable Intelligent Assemblies
- Design Automation Techniques

Module 9: Energy Analysis and Building Performance Evaluation

- Building Performance Fundamentals
- EnergyPlus Workflows
- Daylight and Solar Analysis
- HVAC System Evaluation
- Thermal Comfort Assessment
- Sustainability and Carbon Analysis

Module 10: Documentation, Visualization and Project Delivery

- Annotation and Drafting Standards
- Automated Drawing Production
- Quantity Reports and Schedules
- Rendering and Visualization
- LumenRT Integration