

Autodesk Revit AI Professional

Target Audience

This course is designed for architects, civil engineers, structural engineers, MEP engineers, BIM coordinators, CAD professionals, interior designers, construction professionals, and students who want to develop industry-standard Building Information Modeling (BIM) skills using Autodesk Revit. It is suitable for both beginners seeking a solid foundation and professionals looking to enhance their modeling, documentation, collaboration, and project delivery capabilities.

Course Objective

The objective of this course is to provide participants with comprehensive knowledge and practical skills in Autodesk Revit for Building Information Modeling (BIM). Participants will learn to create architectural, structural, and MEP models, develop parametric families, produce construction documentation, generate schedules and quantity takeoffs, collaborate within multidisciplinary BIM environments, and deliver complete building projects following industry best practices.

Course Outcome

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

- Understand BIM concepts and the Autodesk Revit workflow.
- Create architectural, structural, and MEP building models using Revit tools.
- Develop and customize parametric families and reusable BIM components.
- Produce professional construction documentation, schedules, and quantity take-offs.
- Create realistic visualizations and presentation-ready project deliverables.
- Manage collaborative BIM projects using worksharing and linked models.
- Export, coordinate, and exchange BIM data with external applications.
- Complete an industry-based capstone project from modeling through documentation.

Course Outline

The course comprises **64 hours** of theory and hands-on laboratory sessions and is divided into **15 chapters**. Each chapter includes practical exercises designed to reinforce learning, develop technical proficiency, and provide real-world experience in Autodesk Revit workflows.



Chapter 1. Introduction to BIM and Revit Fundamentals

BIM Concepts

- Building Information Modeling (BIM)
- Role of BIM in the AEC Industry
- Autodesk Ecosystem Overview
- BIM Workflow and Best Practices

Revit Fundamentals

- Revit Interface
- Ribbon
- Properties Palette
- Project Browser
- File Types
- Project Templates

Chapter 2. Project Setup and Basic Modeling

Project Setup

- Creating a New Project
- Project Units
- Project Settings
- Levels
- Grids

Views

- Floor Plans
- Elevations
- Sections
- 3D Views

Modeling Fundamentals

- Drawing Tools
- Modify Tools
- Snaps
- Constraints
- Work Planes

Chapter 3. Architectural Modeling

Building Elements

- Walls
- Curtain Walls



- Stacked Walls
- Doors
- Windows

Horizontal Elements

- Floors
- Roofs
- Ceilings

Vertical Circulation

- Stairs
- Railings
- Ramps

Components

- Openings
- Shafts
- Components
- Furniture
- Model Groups

Chapter 4. Advanced Architectural Modeling

Curtain Wall Systems

- Curtain Walls
- Mullions
- Curtain Panels

Advanced Modeling

- Roof by Footprint
- Roof by Extrusion
- Massing
- Conceptual Design
- In-Place Modeling

Site Design

- Topography
- Building Pads
- Site Components



Chapter 5. Family Creation and Parametric Modeling

Family Fundamentals

- System Families
- Loadable Families
- In-Place Families

Family Editor

- Family Editor Interface
- Reference Planes
- Parameters
- Shared Parameters

Parametric Components

- Creating Parametric Families
- Family Types
- Visibility Controls

Annotation Families

- Annotation Families
- Title Blocks

Chapter 6. Structural Modeling

Structural Elements

- Structural Columns
- Beams
- Beam Systems

Foundations

- Isolated Foundations
- Wall Foundations
- Slab Foundations

Structural Components

- Structural Floors
- Rebar Basics
- Structural Connections
- Analytical Model Basics



Chapter 7. MEP Fundamentals

HVAC Systems

- HVAC Basics
- Duct Modeling

Plumbing Systems

- Plumbing Systems
- Pipes
- Pipe Fittings

Electrical Systems

- Electrical Systems
- Cable Trays
- Conduits

Coordination

- MEP Coordination Workflow

Chapter 8. Documentation and Annotation

Annotation Tools

- Dimensions
- Constraints
- Text
- Tags
- Detail Lines
- Filled Regions

Documentation

- Legends
- Schedules
- Quantities
- Material Takeoffs

Sheet Creation

- Sheets
- Title Blocks
- Viewports



Chapter 9. Detailing and Drafting

Drafting

- Drafting Views
- Detail Components
- Callouts
- Sections

Documentation Resources

- Keynotes
- Revit Detail Library

External References

- CAD Import
- CAD Linking
- PDF Underlays
- Image Underlays

Chapter 10. Visualization and Presentation

Visualization

- Graphic Display Options
- Materials
- Textures

Rendering

- Lighting
- Sun Settings
- Cameras
- Walkthroughs
- Rendering Basics
- Realistic Views

Presentation

- Exploded Views
- Presentation Sheets



Chapter 11. Collaboration and Worksharing

Worksharing

- Worksets
- Central Files
- Local Files

Model Coordination

- Linking Revit Models
- CAD Coordination
- Clash Detection
- BIM Coordination Workflow

Chapter 12. Project Management and Productivity

Project Management

- Phases
- Design Options

View Management

- View Templates
- Visibility Graphics
- Filters

Productivity

- Project Browser Organization
- Revit Shortcuts
- Template Creation

Chapter 13. Quantity Takeoff and BOQ

Quantity Extraction

- Material Quantification
- Multi-Category Schedules

Cost Management

- Cost Parameters
- Export to Excel
- BOQ Workflow



Chapter 14. Interoperability and Model Exchange

Data Exchange

- IFC Export
- Navisworks Export
- CAD Export
- PDF Documentation

Model Maintenance

- Model Audit
- Purge
- File Optimization

Chapter 15. AI-Powered BIM Automation with MCP and Claude for Revit

Introduction to AI in BIM

- Artificial Intelligence in AEC
- Generative AI for BIM
- AI-Assisted Design Workflows
- Use Cases for AI in Revit

Understanding Model Context Protocol (MCP)

- Overview of Model Context Protocol
- MCP Architecture
- MCP Clients and Servers
- Context Sharing Between Applications
- Security and Permissions

Setting Up Claude for Revit

- Installing Claude Desktop
- Installing Revit MCP Server
- Configuring MCP Connections
- Connecting Claude with Autodesk Revit
- Verifying the MCP Environment

Working with Revit Through Claude

- Understanding Natural Language Commands
- Reading Revit Model Information
- Querying Elements and Parameters
- Retrieving Categories, Families, and Types
- Searching Views, Sheets, and Schedules



AI-Assisted Modeling and Documentation

- Creating Revit Elements Using AI
- Modifying Existing Model Components
- Automating Annotation Tasks
- Generating Schedules
- Producing Documentation Using AI

Revit API and MCP Automation

- Understanding the Revit API
- MCP-Based Tool Invocation
- Python and C# Automation Concepts
- AI-Assisted Revit Add-ins
- Workflow Automation

Chapter 16. Capstone Project

Residential Project

- Residential Building Modeling
- Documentation Development

Commercial Project

- Commercial Building Modeling
- Documentation Development

Project Delivery

- Complete Modeling to Documentation
- Sheet Set Submission
- BIM Standards Implementation

