Autodesk Master BIM Professional Course

Target Audience

This course is designed for civil engineers, BIM coordinators, project managers, and construction professionals who want to gain comprehensive proficiency in BIM processes, tools, and industry workflows. It is ideal for those looking to implement BIM standards, manage information models, and lead multi-discipline coordination using Revit, Navisworks, Dynamo, and Autodesk Construction Cloud.

Course Objective

To equip civil engineers and construction professionals with advanced BIM skills — covering information modelling, ISO 19650 compliance, model-based coordination, 4D/5D BIM planning, and digital workflows — enabling them to deliver projects efficiently, collaboratively, and in alignment with international BIM standards.

Course Outcome

After completing this course, learners will be able to create and manage BIM models using Revit, coordinate multi-discipline projects with Navisworks and ACC, implement ISO 19650 information management processes, perform 4D/5D BIM analysis, automate workflows with Dynamo, and apply industry-standard BIM practices across the full project lifecycle.

Course Outline: The course comprises **120-hours** of theory and demonstrations and is divided into **16** different chapters. Each chapter is designed with practical examples and guided exercises to reinforce learning and ensure a strong understanding of BIM concepts and real-world civil engineering workflows.

Chapter 0: Introduction to BIM

- Welcome to the Course
- Overview of BIM Concepts and Industry Applications
- BIM Maturity Levels and Digital Transformation
- Tools and Software Overview (Revit, Navisworks, ACC, Dynamo)
- **Practice Exercises**

Chapter 1: ISO 19650 – Stages of Information Process in AEC

- ISO 19650 Overview and Key Principles
- Information Requirements: OIR, AIR, EIR and PIR
- BIM Execution Plan (BEP) Fundamentals
- Information Delivery Milestones and CDE Integration
- Roles and Responsibilities in ISO 19650 Workflows
- **Practice Exercises**

Chapter 2: AutoCAD for BIM Professionals

- AutoCAD Interface, Workspace and Navigation Tools
- Layer Management: Creating, Controlling and Organising Layers
- Drafting Fundamentals: Lines, Arcs, Polylines and Editing Commands
- Drafting Settings: Snap, Grid, Ortho, Polar and Object Snap (OSNAP)
- Annotation: Text Styles, Dimensions and Leaders
- Blocks and Attributes: Creating and Managing Reusable Content
- Viewports: Model Space, Paper Space and Viewport Configuration
- Printing and Plotting: Page Setup, Plot Styles and PDF Export
- AutoCAD and Revit Interoperability: DWG Import/Export Workflows
- **Practice Exercises**

Chapter 3: Introduction to Information Modelling

- Bluebeam Revu Fundamentals: Markup, Measure and Collaboration

- Revit Basics: Interface, Navigation and Tools
- Revit Basics: Project Setup for Civil Engineers
- Understanding Revit Views, Levels and Grids
- Linking and Importing Files (CAD, IFC, RVT)
- **Practice Exercises**

Chapter 4: Basics of Information Modelling – Components & Families

- Revit Hierarchy: Projects, Views and Families
- Working with System Families and Loadable Families
- Revit Parameters: Instance, Type and Shared Parameters
- Advanced Family Creation: 2D Annotation and 3D Parametric Families
- Toposurface Modelling and Site Modifications
- **Practice Exercises**

Chapter 5: Advanced Modelling – Concrete & Steel Modelling

- Concrete Modelling 101: Foundations, Columns and Beams
- Concrete Modelling 102: Slabs, Walls and Complex Geometry
- Steel Modelling 101: Structural Framing and Connections
- Steel Modelling 102: Advanced Steel Components and Detailing
- Material Assignments and Structural Properties
- **Practice Exercises**

Chapter 6: Advanced Modelling – Precast, Rebar & Schedules

- Rebar Modelling 101: Basic Reinforcement Placement and Coverage
- Rebar Modelling 102: Advanced Rebar Shapes and Host Connections
- Introduction to Revit Schedules: Types and Configuration
- Schedules and Quantity Takeoff: Material and Element Quantification
- Precast Component Modelling and Assembly
- **Practice Exercises**

Chapter 7: Introduction to Autodesk ReCap Pro

- Overview of ReCap Pro: Interface, Tools and Workspace Navigation
- Point Cloud Fundamentals: Acquisition, Formats and Data Structure
- Importing and Managing Scan Data in ReCap Pro
- Scan to BIM Workflow: From Reality Capture to Revit Integration
- Cleaning and Filtering Point Cloud Data
- Measurements, Annotations and Markup in ReCap Pro
- Creating and Exporting RCS/RCP Files for use in Revit and AutoCAD
- Drone and Terrestrial Laser Scanning Integration
- Best Practices for Accurate As-Built Documentation
- **Practice Exercises**

Chapter 8: Documentation & Presentation of BIM Model

- Revit Views: Floor Plans, Sections, Elevations and 3D Views
- Revit Views: Visibility / Graphics Overrides and View Templates
- Annotations and Dimensioning Best Practices
- 2D Detailing with Revit and Legends Creation
- Rendering and Visualization Techniques
- **Practice Exercises**

Chapter 9: Information Management – Annotations, Detailing & Sheets

- Advanced Techniques of Annotations and Detailing
- Revit Sheet Components: Title Blocks and Viewports
- Sheet Management, Revision Control and Optimization
- DIROOTS Add-in Integration for Enhanced Sheet Management
- Printing and Exporting Drawings (PDF, DWG, IFC)
- **Practice Exercises**

Chapter 10: BIM Processes & Industry Workflows

- BIM Implementation Strategy and BEP Development

- Advanced BEP Components: Responsibility Matrix and LOD Schedule
- Project Communication Plans and Information Exchange
- Data Structure, Naming Conventions and Management Protocols
- BIM Use Cases in Civil Engineering Projects
- **Practice Exercises**

Chapter 11: Physical & Cloud Worksharing with CDE

- Introduction to Autodesk Construction Cloud (ACC)
- Revit Worksharing: Central Files, Local Files and Sync
- ACC: Design Collaboration, Issue Tracking and Insights
- Common Data Environment (CDE) Setup and Management
- Access Control, Permissions and Model Publishing
- **Practice Exercises**

Chapter 12: Model-Based Clash Coordination

- Collaboration and Multidisciplinary BIM Workflows
- Introduction to Navisworks: Interface and Navigation
- Clash Detection in Navisworks: Hard, Soft and Clearance Clashes
- Clash Detection in ACC and Coordination Issue Resolution
- Coordination with External Models (IFC, NWC, DWG)
- Visualization and Simulation Techniques for Coordination Reviews
- BIM Track Add-in Integration for Issue Management
- **Practice Exercises**

Chapter 13: 4D & 5D BIM with Navisworks

- 4D Phase Planning: Linking Models to Project Schedules
- 5D Cost Planning: Quantity Extraction and Cost Integration
- Scenario Analysis and What-If Simulations
- Progress Tracking and Construction Sequence Animations
- BIM Track Add-in Integration for Real-Time Planning
- **Practice Exercises**

Chapter 14: Dynamo for Civil Engineers

- Introduction to Dynamo: Visual Programming Interface
- Dynamo Data Manipulation: Lists, Nodes and Logic
- Dynamo and Revit Connection: Automating Repetitive Tasks
- Advanced Dynamo Topics: Custom Scripts and Packages
- Practical Applications: Automated Tagging, Renaming and Data Export
- **Practice Exercises**

Chapter 15: Revit Architecture for Civil Engineers

- Architectural Modelling Basics: Walls, Doors, Windows and Roofs
- Room Bounding, Room Tagging and Area Calculations
- Topography and Site Design Tools
- Landscape Modelling and Site Elements
- Parametric Family Creation for Architectural Components
- **Practice Exercises**