MEP Modelling with BIM Management Essentials

Course Description

This course introduces participants to **Building Information Modelling (BIM) management principles** and equips them with **hands-on skills in Autodesk Revit MEPF (Mechanical, Electrical, Plumbing & Fire Protection)**. The program begins with the fundamentals of BIM, Industry 4.0, ISO 19650 standards, and information delivery frameworks, followed by practical training in creating, managing, and coordinating MEPF systems within Revit. Participants will learn how to design HVAC, electrical, plumbing, and fire protection systems, while applying BIM standards to streamline documentation and collaboration in real-world projects.

Audience Profile

- MEP engineers and consultants (mechanical, electrical, plumbing, and fire protection)
- BIM coordinators, BIM managers, and digital engineers
- AEC professionals transitioning from CAD-based MEP to BIM workflows
- Students and graduates in building services or related disciplines

Prerequisites

- Basic knowledge of mechanical, electrical, and plumbing systems in building design
- Familiarity with CAD/design tools is beneficial but not mandatory
- General computer literacy

Course Objectives

By the end of this course, participants will be able to:

- Understand BIM concepts, standards, dimensions, and ISO 19650 principles
- Apply digital transformation and Industry 4.0 concepts in MEP workflows
- Implement BIM maturity levels, LODs, and information delivery strategies
- Design and model HVAC, electrical, plumbing, and fire protection systems in Revit
- Create fabrication-ready layouts, system legends, and schedules
- Collaborate and coordinate effectively across disciplines using Revit tools
- Generate construction documentation including sheets, callouts, and annotations

---

Table of Contents

- Advantages & Challenges of Digital Transformation

Module 2: Industry 4.0 in AEC

- Concepts & Principles of Industry 4.0
- Impact on AEC Industry

Module 3: BIM Concepts & Dimensions

- Uses & Benefits of BIM
- Components of BIM
- BIM Terminology
- Dimensions of BIM (3D–10D)
- Evolution of BIM Dimensions

Module 4: BIM Maturity & Workflows

- BIM Maturity Levels (0, 1, 2, 3)
- Benefits of Implementing BIM Levels
- RIBA Plan of Work – Stages

Module 5: Level of Development (LOD)

- Introduction to LODs (100–500)
- LOD & LOIN
- Importance & Benefits in AEC Projects

Module 6: Information Requirements & Delivery Plans

- OIR, AIR, PIR
- Master Information Delivery Plan (MIDP)
- Task Information Delivery Plan (TIDP)

Module 7: BIM Standards & ISO 19650

- Overview of BIM Standards
- ISO 19650 Part 1 – Concepts & Principles
- ISO 19650 Part 2 – Delivery Phase of Assets
- ISO 19650 Part 3 – Operational Phase of Assets
- ISO 19650 Part 4 – Information Exchange
- ISO 19650 Part 5 – Security-minded Approach

Module 8: Documentation & Classification

- Document Naming Strategy
- Naming Structures & Rules
- Classification Systems
- OmniClass – Elements by Function, Elements by Form, Products
- UniClass – Systems, Elements/Functions

Part 2: Revit MEPF

Module 9: Getting Started with Revit MEPF

- Introduction to Autodesk Revit MEPF Design
- Overview of Mechanical, Electrical, Plumbing & Fire Protection Systems
- Systems Templates

- User Interface & Project Units
- Linking CAD Files & Revit Files

Module 10: Levels, Grids & Spaces

- Adding & Modifying Levels
- Creating & Managing Grids
- Space Modelling – Creating Spaces, Zones & Modifying Properties

Module 11: HVAC Systems

- Creating an HVAC System
- Understanding & Adding Air Terminals
- Adding Air Equipment
- Mechanical Control Devices (AHUs, VAV Boxes)
- Ducting – Creating Ducts, Flex Ducts, Automatic & Manual Routing
- Creating Air Supply & Return Air Systems
- Checking Duct Systems
- Creating Duct Legends
- Recommended Practices for HVAC Systems
- Generating HVAC Layouts & Fabrication Details
- Placing Fabrication Parts

Module 12: Electrical Systems

- Reflected Ceiling Plan
- Lighting Fixtures – Wall-Mounted & Overhead
- Lighting Fixture Type Properties
- Electrical Equipment – Switchboards, Panel Boards/Distribution Boards
- Adding Power & System Devices – Fixtures, Lighting Devices, Communication Devices
- Power Distribution – Conduits & Cable Trays
- Creating Power & Switch Systems
- Circuiting – Wires, Voltage Definition, Load Calculations
- Wiring Devices & Fixtures – Editing, Drawing Wires Manually

Module 13: Plumbing Systems

- Adding Plumbing Fixtures
- Pipe Settings & Routing Pipes
- Modifying Pipe Segments
- Placing Fittings, Accessories & Equipment

Module 14: Fire Protection Systems

- Sprinkler Libraries & Piping Tools
- Wet & Dry Fire Protection Systems
- Placing Sprinkler Heads & Connections

Module 15: Documentation & Detailing

- View Management – Duplicate Views, Callouts, Sections
- Details Management – Annotations, Text, Tags, Symbols

- Sheet Creation & View Management in Sheets
- Scheduling – System Components & Equipment

Module 16: Collaboration & Coordination

- Collaboration Tools
- Copy/Monitor
- View Templates & WorkSets Creation