

## **Smart Revit MEP Foundations: 3D Modeling, Coordination & BIM Tools**

### **1. TARGET AUDIENCE:**

This course is designed for beginner civil, mechanical, electrical, and plumbing (MEP) engineers, site engineers, draftsmen, and fresh graduates who have a basic understanding of Revit and want to build a solid foundation in 3D modeling, project setup, and basic coordination.

You should understand:

- Basic engineering concepts of HVAC, Electrical, or Plumbing systems.
- Standard building layout signs and terms.
- Basic structural drawings.
- Only a basic understanding of Revit is required; this course builds your confidence from the ground up.

The ideal learner:

- Works on basic residential or commercial building projects.
- Wants to shift from 2D AutoCAD drafting to basic 3D BIM modeling.
- Is preparing for entry-level Revit modeler or MEP draftsman interviews.
- Wants a clear, simple guide to daily Revit design tasks without advanced scripting.

### **2. COURSE OBJECTIVE:**

Learn to navigate, model, and organize basic multi-discipline MEP building networks using Revit, resolve common software issues, and perform basic sheet documentation.

By the end of this course, you will:

- Navigate the Revit interface and open/sync project models confidently.
- Model basic ductwork, cable trays, conduits, and plumbing systems.
- Use basic visibility tools, filters, and color codes to clear up drawings.
- Setup sheets, add notes, create basic schedules, and print your work.
- Fix everyday modeling glitches and use basic plug-ins to help your workflow.

### **3. COURSE OUTLINE:**

The course comprises **40 hours** of simple theory, step-by-step live modeling, and practical assignments, divided into 10 progressive modules.



## MODULE 1: REVIT MEP INTERFACE & NAVIGATION BASICS

- **Session 1.1: Navigating the Workspace**
  - Overview of the Revit user interface, properties bar, and project browser.
  - How to properly synchronize the model to a central file.
  - Troubleshooting: What to do when the model shows a "not responding" status while synchronizing.
- **Session 1.2: Introduction to Coordination Tools**
  - Basic uses and understanding of the Navisworks user interface and all its tabs.

## MODULE 2: INITIAL PROJECT SETUP & MODEL LINKING

- **Session 2.1: Starting a New Project**
  - Simple step-by-step process to create a basic electrical template from scratch.
  - How to attach multiple PDF pages at a single time to save setup time.
- **Session 2.2: Linking External Files**
  - Linking an architecture file and controlling its design options to display the right background.
  - Linking AutoCAD files into Revit.
  - Basic CAD file management: How to edit CAD files in Revit, change their draw order, and control AutoCAD text.

## MODULE 3: VIEW CONTROL, VISIBILITY, & GRAPHICS SETTINGS

- **Session 3.1: Managing Plan Views**
  - Easy guide to understanding View Range and Visibility/Graphics (V/G) settings.
  - How to use Temporary View Properties to look at a drawing without disrupting global settings.
- **Session 3.2: Floor Plan & Ceiling Grid Tweaks**
  - How to display the architectural ceiling grid on your MEP floor plan.
  - How to show doors correctly in a Reflected Ceiling Plan (RCP).
  - Troubleshooting: What to do when a floor plan rotates automatically upon opening a scope box.

## MODULE 4: USING FILTERS & PHASING BASICS

- **Session 4.1: Setting up System Filters**
  - How to use the basic filter command.
  - Understanding the use of simple "AND" and "OR" rules in view filters.
  - Coloring and visual differentiation of elements to improve drawing readability (e.g., Emergency Power = Red, Normal Power = Black, Low Voltage = Blue).
- **Session 4.2: Basic Phasing Control**
  - Introduction to Phasing Control (Existing vs. New construction) and View Templates.

- Setting a dashed line style for elements in the demolished phase.
- Making sure a family takes the phase automatically as per the plan phase layout.

## MODULE 5: INTRODUCTION TO REVIT PARAMETERS

- **Session 5.1: The Parameter Categories**
  - Simple explanations to know the differences between global, project, instance, and shared parameters.
- **Session 5.2: Transferring Project Standards**
  - How to transfer project standards or parameters from one project file to another.
  - How to transfer shared parameters from one family file to another family file.

## MODULE 6: FUNDAMENTALS OF FAMILY CREATION & EDITING

- **Session 6.1: Basic Family Modeling**
  - Understanding basic family creation, its properties, parameters, and functions.
  - Changing a property from a Type property to an Instance property for manufacturer families.
- **Session 6.2: Adjusting Family Types**
  - How to change a family from a hosted type into a non-hosted type.
  - Moving files backward: How to safely lower/convert families from a newer Revit version to an older version.

## MODULE 7: MECHANICAL (HVAC) MODELING & CHECKING

- **Session 7.1: Placing HVAC Components**
  - Working with basic Revit family examples: Placing AHUs, RTUs, Fire/Smoke Dampers, and Duct/Pipe supports.
  - Basic Revit MEP coordination: How to apply simple color codes to HVAC equipment.
  - Setting mechanical equipment clearance spaces to transparent so the equipment stays clearly visible.
- **Session 7.2: HVAC Troubleshooting & Basics**
  - Troubleshooting: Why duct insulation disappears when a duct is in an angular position instead of horizontal/vertical.
  - Troubleshooting: Why CFM airflow drops to zero when applying a duct cap on an Outside Air (OA) duct.
  - Basic calculations: How to calculate a duct's External Static Pressure (ESP).
  - How to create a simple, basic Energy Analysis Model file from your Revit project.

## MODULE 8: ELECTRICAL MODELING & PANEL SCHEDULES

- **Session 8.1: Electrical Component Modeling**
  - Electrical family creation and basic editing for panels, switchboards, transformers, and decorative lighting.
  - How to show visual maintenance clearance outlines directly within a transformer family.
  - Basic routing: Placing cable trays, trays supports, conduits, and creating a simple Single Line Diagram (SLD) layout.
- **Session 8.2: Managing Panel Schedules**
  - Editing panel schedules, creating templates, and making sure panel schedules display conduit sizes.
  - Increasing keynote symbol sizes in panel schedules and adding mini-breakers.
- **Session 8.3: Simple Electrical Layout Rules**
  - Basic rules for wire sizing and voltage drop in Revit 2026.
  - Troubleshooting: Dealing with breaker downsizing limits and automatic 14 AWG cable assignments.
  - Merging cables for multi-wire branch circuits and writing circuit details for an existing panel without actually powering the circuit.
  - Performing simple photometric lighting analysis and assigning basic room tags.

## MODULE 9: PLUMBING SYSTEMS & FABRICATION BASICS

- **Session 9.1: Basic Piping Layouts**
  - How to create and organize simple pipe system classifications.
  - Handling vent/sewer pipe system changes and dealing with Hot & Hot Water Return lines.
  - Graphic adjustments: How to show a vertical riser pipe as a full-diameter pipe instead of a single line.
- **Session 9.2: Plumbing Components & Fabrication Tools**
  - Working with basic plumbing family examples: Water heaters, interceptors, and water softeners.
  - Basic material creation rules for piping assets.
  - Introduction to the MEP fabrication system: How to do basic, efficient modeling and import pipe materials for fabrication.

## MODULE 10: SCHEDULES, DOCUMENTATION, & WORKFLOW PLUG-INS

- **Session 10.1: Quantities & Special Legends**
  - Generating a basic Bill of Quantities (BOQ) schedule in Revit and creating a lighting fixture schedule.
  - How to create a clean keynote list in a table format with a custom sheet notes legend.
  - Setting up a fixture unit calculation table using simple, automated formulas that work like Excel.

- **Session 10.2: Sheet Assembly & Printing**
  - Sheet setup, organization, and sorting rules.
  - Understanding the basic parameters of a revision cloud so it automatically adds details into your title block.
  - Standard print setups and how to output a complete 3D model for printing.
- **Session 10.3: Introduction to Helpful Tools**
  - What is Dynamo and how can it make basic MEP workflows more efficient?
  - Introduction to time-saving plug-ins: How to use pyRevit, DiRoots, and similar basic add-ons.
  - Exploring simple alternatives to link Excel files with Revit data.
  - Running a basic coordination review for copy/monitored light fixtures.