

# Autodesk Revit for Mechanical Design

## Professional Training

### Target Audience

This course is ideal for mechanical engineers, HVAC designers, MEP professionals, and drafting technicians who want to specialize in BIM (Building Information Modeling) using Autodesk Revit for mechanical systems design and documentation.

### Course Objective

To equip learners with in-depth knowledge and hands-on skills in using Revit for mechanical system modeling, analysis, coordination, and documentation—preparing them for Autodesk's Professional Certification exam.

### Course Outcome

By the end of the course, participants will be able to create, modify, and manage mechanical systems in Revit, perform HVAC layout and ductwork design, collaborate across disciplines, and produce construction-ready documentation aligned with industry standards.

### Prerequisites:

Basic knowledge of mechanical systems and prior experience with Revit or any CAD software is recommended. Familiarity with MEP workflows will be beneficial but not mandatory.

**Course Outline:** The course comprises **40-hours** of theory and labs and is divided into **10** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

## Chapter 1. Introduction to Autodesk Revit for Mechanical

Introduction to Autodesk Revit for Mechanical

Autodesk Revit as a Building Information Modeler (BIM)

Basic Concepts and Principles

- Understanding the Parametric Building Modeling Technology
- Terms Used in Autodesk Revit for Mechanical
- Creating a Mechanical Model Using Parametric Elements
- Visibility/Graphics Overrides, Scale, and Detail Level
- Extracting Project Information
- Creating a Mechanical Drawing Set
- Creating an Unusual Building Geometry
- Flexibility of Creating Special Elements
- Creating Services Layouts
- Working on Large Projects
- Working in Large Teams and Coordinating with Consultants

Starting Autodesk Revit

User Interface

- Title Bar
- Ribbon
- Application Frame
- Status Bar
- View Control Bar
- Options Bar
- Type Selector
- Drawing Area

Project Browser

- Keyboard Accelerators
- Properties Palette

Dialog Boxes

Multiple Document Environment

Interoperability of Autodesk Revit

Building Information Modeling and Autodesk Revit

Autodesk Construction Cloud

Autodesk Revit Help

Export IFC Element Mapping

## Chapter 2. Getting Started with an Mechanical Project

Overview of an BIM-MEP Project

Essentials for an MEP Project

Starting a New MEP Project

Project Units

- Common Unit Type
- HVAC Unit Type
- Electrical Unit Type
- Piping Unit Type

Project Templates

- Creating a Custom Project Template
- Settings for the Project Template

Linking Revit Models and Sharing Coordinates

- Managing the Linked Revit Models in the Project Browser
- Converting Linked Models to Groups - Binding Links
- Controlling the Visibility of Linked Models
- Managing Links
- Including Elements of Linked Models in Schedules
- Copying Linked Model Elements
- Copying and Monitoring Linked Model Elements

Snaps Tool

- Dimension Snaps Area
- Object Snaps Area
- Temporary Overrides Area

Saving an MEP Project

- Using the Save As Tool
- Using the Save Tool

The Options Dialog Box 2-29 General Tab

- Graphics Tab
- Colors Tab
- Hardware Tab
- File Locations Tab
- Rendering Tab
- Check Spelling Tab
- SteeringWheels Tab
- ViewCube Tab
- User Interface Tab
- Cloud Model Tab

Closing an MEP Project

Exiting an MEP Project

Opening an Existing MEP Project

- Opening an Existing Project Using the Open Tool
- Using the Windows Explorer to Open an Existing Project

## Chapter 3. Creating Building Envelopes

Introduction

Levels

- Understanding Level Properties
- Adding Levels
- Modifying Level Parameters
- Controlling the Visibility of Levels

Working with Grids

- Creating Grids
- Modifying Grids
- Grid Properties

Reference Planes

Work Planes

- Setting a Work Plane
- Controlling the Visibility of Work Planes

Working with Project Views

- Viewing a Building Envelope
- Overriding the Visibility/Graphic of an Element
- Overriding the Visibility/Graphic of Element Category
- Making Elements Transparent
- Using the Temporary Hide/Isolate Tool
- Plan Views
- Elevation Views
- Section Views
- Using the Scope Box Tool

Understanding Wall Types

- Exterior Wall Type
- Curtain Wall Type

Creating Architectural Walls

- Specifying Architectural Wall Properties
- Sketching Walls

Using Doors in a Building Model

- Adding Doors

- Understanding Door Properties
- Adding a Door to a Wall

#### Adding Windows in a Building Model

- Adding Windows
- Understanding Window Properties
- Adding a Window to a Wall

#### Doors and Windows as Wall Openings

#### Openings in the Wall

#### Creating Architectural Floors

- Sketching the Floor Boundary

#### Placing Ceilings

- Creating an Automatic Ceiling
- Sketching a Ceiling
- Using the Pick Walls Method
- Modifying a Ceiling

#### Creating Rooms

- Adding Rooms
- Calculating Room Volumes

#### Cutting Openings in a Wall, Floor, and Ceiling

- Creating Openings Using the By Face Tool
- Creating Openings Using the Vertical Tool
- Creating Openings Using the Wall Tool
- Creating Openings Using the Dormer Tool
- Creating Openings Using the Shaft Tool

## Chapter 4. Creating Spaces and Zones and Performing System

### Analysis

#### Introduction

#### Space Modeling for Building Analysis

- Creating Spaces
- Modifying Spaces

#### Color Schemes

- Creating and Editing Color Schemes
- Applying a Color Scheme to the Spaces
- Adding Color Scheme Legends
- Modifying a Color Scheme
- Modifying a Color Scheme Legend

### Creating Zones from Spaces

- Adding and Modifying HVAC Zones

### Performing System Analysis

- Setting the Model
- Adding the Analytical System and Defining the System Zone
- Creating the Analytical Model
- Running the System Analysis

## Chapter 5. Creating an HVAC System

### Introduction

#### Creating an HVAC System

- Understanding Air Terminals
- Adding Air Terminals
- Adding Air Equipments
- Adding Mechanical Control Devices
- Creating Air Supply System
- Creating Return Air Terminals, Air System, and Air Ductwork
- Inspecting the Duct System
- Checking the Duct System
- Creating Duct Legend
- Different Components of an HVAC System
- Recommended Practices for Creating HVAC Systems

#### Generating HVAC System Layouts

#### Creating Ducts and Duct Fittings

- Creating Ducts

#### Fabrication Details in Revit

- Configuring the Fabrication and Loading Services
- Placing the Fabrication Parts

## Chapter 6. Modeling for mechanical design

- Add mechanical equipment
- Add plumbing fixtures
- Add air terminals
- Add fire protection sprinklers
- Configure mechanical settings
- Create duct systems

- Create piping systems
- Define analytical pipe connections
- Track systems with the System Browser
- Modify pipe and duct types
- Add duct components
- Add pipe components
- Practice exercise

## Chapter 7. Documentation for mechanical design

- Work with view templates and visibility/graphic overrides
- Use miscellaneous view features
- Produce schedules
- Work with sheets, titleblocks, and revisions
- Work with view types
- Apply phasing
- Use tags
- Use keynotes, note blocks, and numbered lists
- Practice exercise

## Chapter 8. Families for mechanical design

- Define MEP connectors
- Understand family types
- Understand family creation workflow
- Determine family category and part type
- Differentiate between family hosting types
- Configure element visibility settings
- Create annotation families and tags
- Define symbols and annotations in a family
- Use parameter types
- Distinguish between parameter disciplines and data types
- Understand syntax for equations and formulas



## Chapter 9. Analysis for mechanical design

- Adjust energy settings
- Create system zones
- Create analytical systems
- Create energy model
- Assign material thermal properties
- Review calculated values in model
- Practice exercise

## Chapter 10. Collaboration for mechanical design

- Import and link files
- Manage linked files
- Understand worksharing concepts
- Export to different formats
- Check for interferences
- Use copy and monitor
- Use design options
- Transfer project standards