KOENIG
step forward

AUTODESK
Authorized Training Center

Autodesk Professional in Revit for Mechanical Design

Target Audience

This course is designed for mechanical engineers, MEP designers, BIM managers, and professionals who want to strengthen their expertise in mechanical system design and documentation using Autodesk Revit. It is suitable for professionals working in architecture, MEP engineering firms, and design-build environments, as well as students and engineers looking to enhance their skills in 3D mechanical modeling and Building Information Modeling (BIM).

Course Objective

The course aims to provide in-depth knowledge of Autodesk Revit for mechanical design, enabling participants to effectively create, analyze, and document mechanical systems in a BIM environment. By the end of this course, learners will be able to model complex HVAC and plumbing systems, generate detailed construction documents, perform energy and system analysis, and collaborate seamlessly across multidisciplinary project teams.

Course Outcome

• **Mechanical System Modeling Proficiency –** Gain expertise in modeling ductwork, piping systems, equipment, fixtures, and other mechanical components using advanced Revit tools.

• **Comprehensive Documentation Skills –** Learn to produce high-quality views, schedules, sheets, and annotations tailored for mechanical design projects.

• **Family Creation & Parameter Management** – Master creating and customizing Revit families, including MEP connectors and annotation symbols, and manage complex parameter data.

• **System Analysis & Energy Modeling –** Understand how to perform mechanical system analysis and create energy models to support design decisions.

• **Collaboration & BIM Coordination** – Explore linking, worksharing, and interference checks to support integrated project delivery and effective collaboration among design disciplines.

Course Outline: The course comprises **56 hours** of theory and practical labs and is divided into 5 comprehensive chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Chapter 1. Modeling Mechanical Systems

Adding Mechanical Equipment and Fixtures
- Adding mechanical equipment (air handling units, terminal units, pumps, tanks, chillers, boilers)
- Adding plumbing fixtures (water closets, urinals, sinks, lavatories, showers, drains)
- Adding air terminals (registers, grills, diffusers)
- Adding fire protection sprinklers

Creating Mechanical Systems
- Configuring mechanical settings (duct and pipe settings)
- Creating duct systems (supply, return, exhaust)
- Creating pipe systems (hydronic supply and return, domestic hot and cold water, sanitary, fire protection)
- Defining analytical pipe connections
- Using the System Browser

Modeling Connecting Geometry
- Modifying pipe and duct types (routing preferences, default fittings)
- Adding duct components (ducts, fittings, accessories)
- Adding pipe components (pipes, fittings, accessories)

Chapter 2. Documentation and View Management

Manipulating Views and Templates
- Assigning, applying, and editing view templates and visibility/graphic overrides
- Using miscellaneous view features (view selection boxes, scope boxes, view range, plan regions, browser organization, color fills, phase filters)
- Producing Schedules and Sheets

- Creating schedules (building components, key schedules, embedded schedules, linked models)
- Working with sheets, title blocks, and revisions (revision numbering, tags, clouds, settings)

Understanding View Types

- Drafting views
- Legend views
- Callouts
- Section/detail views
- Elevation views
- Dependent views
- 3D views

Applying Phasing and Filters

- Using element phase settings, phase filters, phase graphics overrides
- Using Annotations and Keynotes
- Using tags (equipment, plumbing fixtures, duct/pipe, accessories, space, air terminal tags)
- Using keynotes, note blocks, numbered lists

Chapter 3. Family Creation and Parameter Management

Modeling Family Elements

- Defining MEP connectors (duct, pipe, electrical)
- Understanding family types (system and component)
- Family creation workflow (constraints, reference planes, lookup tables, geometry creation, nested families, formulas)
- Determining family category and part type
- Differentiating family hosting types
- Configuring element visibility settings (object styles, subcategories, detail level, visibility)

Modeling Annotation Families and Tags

- Creating annotation families and tags (labels, symbolic lines, nested annotations)
- Defining symbols and annotations in a family

Adding and Managing Parameters

- Using and understanding parameter types (family, shared, system, project, global, instance, type parameters)
- Distinguishing between parameter disciplines and data types
- Understanding syntax for equations and formulas

Chapter 4. Mechanical Systems Analysis

Adjusting Energy Settings and Analytical Systems
- Setting energy parameters (location, building type, construction type, occupancy)
- Creating system zones
- Creating analytical systems (air systems, water loops, zone equipment

Creating Energy Models and Thermal Assignments
- Creating energy models
- Assigning material thermal properties (construction types)

Reviewing Analytical Data
- Reviewing calculated values in the model (analytical spaces, reports)

Chapter 5. Collaboration and Worksharing

Working with Reference and Linked Files
- Understanding imported vs. linked files (CAD files, images, PDFs, positioning)
- Managing linked files (adding, removing, loading, reloading)

Applying Worksharing Concepts
- Understanding worksets, central file, file synchronization, element borrowing/relinquishing

Collaborating with Other Teams
- Exporting to different formats (options, file formats, reports)
- Checking for model interferences
- Using copy/monitor data and conducting coordination reviews
- Managing design options (assign, display, accept, switch between options)
- Transferring project standards