

Revit Structure Fundamentals



Days: 4

Prerequisites: This training guide introduces the fundamental skills in learning how to use the Autodesk Revit Structure software. It is highly recommended that students have experience and knowledge in structural design and its terminology.

Audience: This course is idea for those in the structural design field.

Description: To take full advantage of Building Information Modeling, the Autodesk® Revit® Structure Fundamentals training guide has been designed to teach the concepts and principles from building design through construction documentation using the Autodesk Revit Structure software. This training guide is intended to introduce students to the user interface and the basic building components of the software that makes it a powerful and flexible structural modeling tool. The goal is to familiarize you with the tools necessary to create, modify, analyze, and document the parametric model.

The topics include the following:

- Introduction to the Autodesk Revit software
- Basic drawing and editing tools
- Setting up levels and grids
- Working with views
- Starting a structural project based on a linked architectural model
- Adding structural columns and walls
- Adding foundations and structural slabs
- Structural reinforcement
- Beams, trusses, and framing systems
- Analytical models and placing loads
- Project practices to reinforce learning
- Construction documents
- Annotating construction documents
- Detailing
- Scheduling

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OUTLINE:

CHAPTER 1 INTRODUCTION TO BIM AND AUTODESK

- 1.1 Building Information Modeling
- Workflow and BIM
- Views and Sheets
- 1.2 Overview of the Interface
- 1.3 Standard Terminology
- 1.4 Starting Projects
- Opening Projects
- Starting New Projects
- Saving Projects
- 1.5 Viewing Commands
- Zooming and Panning
- Viewing in 3D
- Visual Styles
- Practice 1a Open and Review a Project

CHAPTER 2 BASIC DRAWING AND MODIFY TOOLS

- 2.1 Using General Drawing Tools
- Draw Tools
- Drawing Aids
- Reference Planes
- 2.2 Editing Elements
- Selecting Elements
- Selecting Multiple Elements
- Practice 2a Draw and Modify Elements
- 2.3 Working with Basic Modify Tools
- Moving and Copying Elements
- Rotating Elements
- Mirroring Elements
- Creating Linear and Radial Arrays
- Practice 2b Work with Basic Modify Tools
- 2.4 Working with Additional Modify Tools
- Aligning Elements
- Splitting Linear Elements
- Trimming and Extending
- Offsetting Elements
- Practice 2c Work with Additional Modify Tools

CHAPTER 3 SETTING UP LEVELS AND GRIDS

- 3.1 Setting Up Levels
- Modifying Levels
- Creating Plan Views
- 3.2 Creating Structural Grids
- Adding Grids
- Modifying Grid Lines
- Practice 3a Add Levels and Grids

CHAPTER 4 WORKING WITH VIEWS

- 4.1 Duplicating Views Duplication Types
- 4.2 Adding Callout Views
- Modifying Callouts
- 4.3 Setting the View Display
- Underlays
- View Range Overriding Graphics in a View
- Practice 4a Set Up Duplicate Views and Callouts
- 4.4 Elevations and Sections
- Elevations
- Sections
- Modifying Elevations and Sections
- Practice 4b Create Elevations and Sections

CHAPTER 5 STARTING STRUCTURAL PROJECTS

- 5.1 Linking and Importing CAD Files
- Practice 5a Link and Manage a CAD File
- 5.2 Linking in Revit Models
- Managing Practice 5b Start a Structural Project
- 5.3 Copying and Monitoring Elements
- Monitoring Elements
- 5.4 Coordination Review
- Practice 5c Coordinate Projects

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CHAPTER 6 ADDING COLUMNS AND WALLS

- 6.1 Placing Structural Columns
- Modifying Columns
- Loading Structural Column Types
- Placing Slanted Structural Columns
- Working in 3D Views
- Working in Elevations or Sections
- Practice 6a Add Structural Grids and Columns
- 6.2 Modeling Walls
- 6.3 Modifying Walls
- Practice 6b Add Structural Walls

CHAPTER 7 ADDING FOUNDATIONS

- 7.1 Creating Wall Footings
- 7.2 Adding Isolated Footings
- Working with Custom Families
- 7.3 Creating Piers and Pilasters
- Practice 7a Add Footings Piers and Pilasters

CHAPTER 8 ADDING STRUCTURAL SLABS

- 8.1 Creating Structural Slabs
- Modifying Slabs
- Slab Edges
- Practice 8a Add Structural Slabs
- 8.2 Creating Shaft Openings
- Practice 8b Add Shafts

CHAPTER 9 STRUCTURAL REINFORCEMENT

- 9.1 Structural Reinforcement
- Setting the Rebar Cover Depth
- Reinforcement Settings
- 9.2 Adding Rebar
- Multi-planar Rebar
- Rebar View Visibility
- 9.3 Modifying Rebar
- Rebar Types
- Editing Plan and Section Profiles
- Practice 9a Add Rebar
- 9.4 Reinforcing Walls, Floors, and Slabs
- Area Reinforcement
- Path Reinforcement
- Fabric Reinforcement
- Modifying Area, Path, & Fabric Reinforcement
- Practice 9b Reinforce Structural Elements

CHAPTER 10 STRUCTURAL FRAMING

- 10.1 Modeling Structural Framing
- Adding Bracing
- Cross Bracing Settings
- Practice 10a Add Structural Framing
- Practice 10b Add Bracing
- 10.2 Modifying Structural Framing
- Sloping and Offsetting Beams
- Adding Beam Cantilevers and Cutbacks
- Changing the End Reference
- Changing Justifications
- Attaching a Column to a Beam
- Applying Beam Coping
- Editing Beam Joins
- Practice 10c Modify Structural Framing
- 10.3 Using Trusses
- Attaching Trusses to Roofs
- Setting Framing Types in Trusses
- Practice 10d Add Trusses

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CHAPTER 11 STRUCTURAL ANALYSIS

- 11.1 Preparing Projects for Structural Analysis
- Structural Settings
- 11.2 Viewing Analytical Models
- Graphic Overrides for Analytical Model Categories
- Practice 11a Analytical Settings and Views
- 11.3 Adjusting Analytical Models
- Analytical Justifications
- Analytical Properties
- Manually Adjusting the Analytical Model
- Creating Analytical Links
- 11.4 Placing Loads
- Boundary Conditions
- Adding Loads
- Practice 11b Adding Loads

CHAPTER 12 PROJECT - CONCRETE STRUCTURE

12.1 Start a Structural Project

12.2 Create Foundation Elements

12.3 Frame a Concrete Structure

CHAPTER 13 CREATING CONSTRUCTION DOCUMENTS

- 13.1 Setting Up Sheets
- Sheet (Title Block) Properties
- 13.2 Placing and Modifying Views on Sheets
- Modifying Views on Sheets
- Working Inside Views
- Practice 13a Create Construction Documents
- 13.3 Printing Sheets
- Printing Options

CHAPTER 14 ANNOTATING CONSTRUCTION DOCUMENTS

- 14.1 Working with Dimensions
- Modifying Dimensions
- Multi-Rebar Annotation
- 14.2 Working With Text
- Spell Checking
- Creating Text Types
- Practice 14a Add Dimensions and Text Notes
- 14.3 Adding Tags
- Tagging in 3D Views
- Tagging Multiple Elements
- Beam Annotations
- 14.4 Adding Detail Lines and Symbols
- Using Symbols
- Structural Specific Symbols
- Practice 14b Add Tags and Symbols
- 14.5 Creating Legends
- Practice 14c Create Legends

CHAPTER 15 CREATING DETAILS

- 15.1 Setting Up Detail Views
- Connecting a Callout to a Drafting View
- Saving a Drafting View
- 15.2 Adding Detail Components
- Detail Components
- Repeating Details
- 15.3 Annotating Details
- Creating Filled Regions
- Adding Detail Tags
- Practice 15a Create a Detail Based on a Section Callout
- Practice 15b Create a Bracing Detail
- Practice 15c Create a Detail Based on a CAD File
- Practice 15d Additional Detail

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CHAPTER 16 SCHEDULING

- 16.1 Structural Schedules
- 16.2 Graphical Column Schedules
- Modifying Graphical Column Schedules
- 16.3 Working with Schedules
- Modifying Schedules
- Modifying a Schedule on a Sheet
- Importing and Exporting Schedules
- 16.4 Creating Schedules
- Schedule Properties
- Material Takeoff Schedules
- Practice 16a Column, Count, and Footing Schedules