Autodesk Revit Structure Essentials

Overview

This course covers the basics of Autodesk Revit® Structure. Users are introduced to the concepts of Building Information Modeling and the tools for parametric design, analysis, and documentation. They learn the fundamental features of Autodesk Revit Structure, learn to use the 3D parametric design tools for creating and analyzing a project, and finish with construction documentation and design visualization. This guide offers both imperial and metric hands-on exercises representing real-world structural design scenarios.

Prerequisites

No previous CAD experience is necessary, however before using this courseware the student should have working
knowledge of the following:

- Design, drafting or engineering principles
- Microsoft Windows XP, Microsoft Windows Vista, Microsoft Windows 7 or Microsoft Windows 8.

Available Exams and Certifications

- Autodesk Certified User
- Autodesk Certified Professional

Course Accreditations

4 Credits (By the South African Institute of Civil Engineers - SAICE)

Course Outline

Revit in a Nutshell

- Interactive exercise on creating and documenting a basic building

Introducing Revit as a BIM tool

- What is BIM and what does it mean?
- The benefits of BIM
- What will BIM deliver?
- Industry drivers
- Introducing Levels of BIM
- Implications on team and workflow; fee and deliverables; contract and insurance issues

Project Navigation and View Creation

- Interactive session introducing the menu and screen layout
- Interrogating the model to extract views
    o Plans, sections and elevations
    o Displaced views, callouts and drafting views
    o 3D isometrics, perspectives and walkthrough movies
- Placement and properties of grids, levels and dimensions
- Introduction to basic Revit elements
- Exercise on creating levels, grids and using dimensions and scope boxes

Element Selection and Manipulation

- Interactive session introducing object selection methods
- Element properties and manipulation
- Instance and Type parameters
- Modify tools, Nodes and Snaps
- Exercise on basic editing tools, trim, offset, align, etc

Visibility Control and Categorisation

- Project-Wide Settings
- View Specific Overrides
- Element Specific Overrides
- Individual Line Overrides
- Exercise on modifying element visibility

Model Development Methodology

- Is BIM just about 3D?
- Information timeline and overload
- How a project develops from a base template
- The complexity of components
- Controlling graphical display

Establishing a Project

- Project units - Common and Structural
- Structural settings and symbolic representation
- Analytical settings
- Linking CAD and Revit Architecture
- Copy monitor and coordination review
- Exercise on linking a Revit Architecture model and using copy/monitor tools

Modelling Basics - Walls, Columns, Beams and Bracing

- Basic definitions
- Relating slabs to walls and supporting framework
- Column and beam placement and behaviour
- Element connectivity and display
- Bracing characteristics
- Exercise on element placement techniques and introducing sketching principles

Foundations and Piling

- Footings and foundations types
  - Isolated pads, piles and strip foundations
- Slabs, standard and in-place family foundations
  - Slab edges, ground beams
- Foundation walls, piers and pilasters
- Exercise on foundation slabs, walls, piers, pilasters, footings and pile caps

System Family

- Editing Principles of composite system family definition
- Understanding properties such as function, and wrapping of layers
- Creating and utilising a system family library
- Exercise on system family editing

Basic Schedules and Legends

- Generation of tabular interrogations of the model
  - Scheduling Components
  - Style schedules
  - Legends
- Exercise on creating a column and foundation schedule

Slab and Roof Tools

- Sketching Rules
- Relating to slabs to walls and supports
- Cantilevers, span direction and adding slopes
- Slab foundation and slab edge
- Basic Roof Designs
- Exercise on placing floor slabs and creating roofs

Stairs Ramps and Railings

- Stair by component and by sketch
- Characteristics of simple ramps
- Hosted and stand-alone handrailing
- Exercise on placing stairs and hand railing

Beam and Truss Systems

- Beam systems creation and placement
- Sketching boundaries and rules
- Modifying beam system properties
- Concrete framing systems and pan joist slabs
- Truss elements, placement and family creation
- Attaching trusses to roofs and floors
- Exercise on creating and placing beam and truss systems

2D Draughting and Annotation

- Introducing annotation tools and component categories
- Detail component libraries
- Repeating details
- Lines and arcs
- Text, Tags and keynotes
- Exercise on generating and annotating a construction detail

Sheet Compilation and Publication

- Project browser organisation – WIP and Publish
- Creating and populating sheets
- Working with schedules
- Publishing and document management