

Autodesk Revit Structure & ReCap Pro ,Scan-to-Model

Target Audience

This course is designed for civil and structural engineers, BIM technicians, surveyors, and renovation specialists who want to integrate reality capture data with Revit BIM modelling. Ideal for professionals involved in as-built BIM creation, retrofit projects, heritage building documentation, and scan-to-BIM workflows.

Course Objective

To equip participants with skills in acquiring and processing point cloud data using ReCap Pro and using that data to create accurate, information-rich BIM models in Revit Structure — enabling precise as-built documentation, clash avoidance in retrofits, and seamless digital twin creation.

Course Outcome

After completing this course, learners will be able to import, register and clean scan data in ReCap Pro, link processed point clouds into Revit, model structural elements to existing conditions, manage deviation analysis, produce as-built BIM documentation, and deliver scan-to-BIM models to clients and contractors.

Course Outline

The course comprises **40-hours** of theory and demonstrations and is divided into **8** different chapters. Each chapter is designed with practical examples and guided exercises to reinforce learning.

Chapter 0: Introduction to Scan-to-BIM

- Course Overview and Scan-to-BIM Industry Workflow
- Reality Capture Technologies: LiDAR, Structured Light, Photogrammetry



- Applications: Renovation, Heritage, Infrastructure and Retrofit
- Software Ecosystem: ReCap Pro and Revit
- **Practice Exercises**

Chapter 1: ReCap Pro – Data Import and Registration

- ReCap Pro Interface and Project Setup
- Importing Scan Formats: E57, LAS, PTX, RCS
- Manual and Automatic Scan Registration
- Visual Quality Check and Accuracy Validation
- Creating and Exporting RCP Files for Revit
- **Practice Exercises**

Chapter 2: Point Cloud Processing & Preparation

- Filtering Noise and Unwanted Scan Data
- Clipping Regions and Managing Scan Density
- Colour and Intensity Visualisation Settings
- Measurement and Annotation in ReCap
- Geo-Referencing and Coordinate System Setup
- **Practice Exercises**

Chapter 3: Linking Point Clouds in Revit

- Inserting and Managing RCP/RCS Files in Revit
- Visibility Settings: Cropping, Slicing and Display Styles
- Aligning Point Cloud to Project Coordinate System
- Managing Multiple Scans and Phases
- **Practice Exercises**

Chapter 4: As-Built Modelling in Revit – Structure

- Modelling Existing Columns, Beams and Slabs from Point Cloud
- Modelling Walls, Openings and Structural Connections
- Using Constraints and Alignment Tools for Accuracy
- Managing Tolerances and Deviation Checking
- **Practice Exercises**



Chapter 5: Advanced As-Built Modelling Techniques

- Modelling Irregular Geometry from Point Cloud Data
- In-Place Families for Non-Standard Elements
- Phase Management: Existing, Demolished and New
- Rebar and Connection Modelling for Retrofits
- **Practice Exercises**

Chapter 6: Deviation Analysis & Quality Control

- Comparing BIM Model to Point Cloud for Accuracy
- Using Third-Party Add-Ins for Deviation Mapping
- Documenting Discrepancies and Model Notes
- As-Built Reporting Standards and Deliverables
- **Practice Exercises**

Chapter 7: Documentation, Deliverables & Handover

- Producing As-Built Drawings from Revit
- Schedule Extraction: Quantities, Areas and Volumes
- IFC Export for Open BIM Handover
- Client Deliverable Package: Drawings, Model and Report
- Capstone: Scan-to-BIM Full Project Exercise
- **Practice Exercises**

