

# Visual programming with Dynamo

## Target Audience

This course is designed for

- BIM Engineers and BIM Coordinators
- Revit Users seeking to automate repetitive tasks
- Architects, Structural, and MEP Designers
- BIM Managers and Digital Delivery Professionals
- Computational Designers
- Engineering and Architecture Students with basic Revit knowledge

## Course Objective

To equip learners with the knowledge and practical skills to use Dynamo for Autodesk Revit to automate workflows, create computational design solutions, manage project data, and improve productivity through visual programming and custom automation techniques.

## Course Outcome

Upon successful completion of this course, participants will be able to:

- Understand the fundamentals of visual programming using Dynamo.
- Create and manage Dynamo scripts to automate Revit workflows.
- Work with data structures, lists, geometry, and computational design concepts.
- Develop automation for documentation, annotation, and sheet creation.
- Integrate Excel with Revit for efficient data import and export.
- Manage Revit parameters and perform QA/QC checks using Dynamo.
- Create custom nodes, utilize Dynamo packages, and build reusable automation solutions.
- Apply industry best practices to improve BIM workflow efficiency and productivity.

## Course Outline

The course comprises **40-hours** of theory and demonstrations and is divided into **7** different chapters. Each chapter is designed with practical examples and guided exercises to reinforce learning and ensure a strong understanding of Dynamo



## **Chapter 1: Dynamo Foundations & Revit Integration**

- Visual Programming and Dynamo Interface
- Data, Functions, and Algorithms
- Explicit vs. Implicit Workflows
- Interacting with Revit Elements in Dynamo
- Get and Set Approach

## **Chapter 2: Advanced Data Structures and Logic in Dynamo**

- Lists and List Operations
- Levels and List Lacing
- List Management Techniques
- Implementing Conditional Logic
- Dictionaries

## **Chapter 3: Geometry and Computational Design**

- Dynamo Geometry Hierarchy
- Geometry Primitives
- Dynamo to Revit
- Creating Revit Elements through Dynamo
- Coordinate Systems and Transformations

## **Chapter 4: Automating Documentation & Annotation**

- Introduction to Automation through Dynamo
- Annotations through Dynamo
- Creating and Managing Revit Views
- Automating Sheet Creation
- Placing Elements in Specific Locations within Sheets

## **Chapter 5: Excel Integration with Dynamo**

- Importing Data from Excel
- Exporting Data to Excel
- Mapping Excel Data to Revit Elements

## **Chapter 6: Advanced Parameter Management & QA/QC**

- Working with Parameters and Project Parameters
- Error Checking and Auditing Model Health



- Color Coding Elements (QA)
- View Overrides through Dynamo

## **Chapter 7: Custom Packages, UI, and Efficiency**

- Introduction to Dynamo Packages
- Creating Custom Nodes
- Best Practices in Dynamo
- Data-Shapes Package and Custom UIs
- Working with Dynamo Player

