

# BIM Course

## Architecture



## Course Description

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Autodesk Revit Architecture The Complete Guide is designed to give you a solid understanding of Revit Architecture, its features, and capabilities, from the basics through to the most advanced and complex topics. This course covers Creating Walls, Adding Site Features, Using Massing Tools, Rendering and Walkthroughs, and Using Advanced Features.

Autodesk Revit allows professionals to optimize building performance and share model data with engineers and contractors. It is software for architectural design, MEP, and structural engineering, and a solution for collaborative BIM; its powerful tools let you use the intelligent model-based process to plan, design, construct, and manage buildings and infrastructure.

## Prerequisite

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Basic computer skills and familiarity with the drafting standards.

## NOTE:

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This course is presented in an online format. No printed materials are provided.

## Instructional Methodology

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This course is a self-guided online course. Students have 60 days to complete the curriculum, but may work at their own pace throughout the course. Lessons are presented in written format, video format and have a hands-on assignment at the end of each learning module.



# Course Content

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- 1. Introduction to Revit Architecture**
  - a. User Interface
  - b. Options and Help
  - c. Starting an Architectural Project
  
- 2. Starting a New Architectural Project**
  - a. Navigation Tools
  
- 3. Creating Walls**
  - a. Creating Architectural Walls
  - b. Creating Architectural Walls II
  
- 1. Using Basic Building Components I**
  - a. Adding Doors
  - b. Adding Window and Wall Openings
- 2. Using the Editing Tools**
  - a. Working with Selection Sets
  - b. Editing Tools
  - c. Editing Tools II
  - d. Grouping
  - e. Retrieving Information about Elements
- 3. Datum Planes and Creating Standard Views**
  - a. Working with Reference Planes
  - b. Working with Levels
  - c. Working with Grids
  - d. Working with Project Views
- 4. Using Basic Building Components II**
  - a. Creating Floors
  - b. Creating Roofs
  - c. Shape Editing Tools
  - d. Creating Ceilings
  - e. Adding Rooms




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5. **Using Basic Building Components III**
    - a. Working with Components
    - b. Adding Stairs
    - c. Adding Railings and Ramps
    - d. Creating Curtain Walls
  6. **Adding Site Features**
    - a. Working with Site Features
    - b. Property Lines and Building Pads
    - c. Adding Site Components
  7. **Using Massing Tools**
    - a. Understanding Massing Concepts  
Creating Massing Geometry
    - b. in the Family Editor
    - c. Creating Families
  8. **Adding Annotations and Dimensions**
    - a. Adding Tags
    - b. Keynotes
  9. **Creating Project Details and Schedules**
    - a. Project Detailing
    - b. Adding Text Notes
    - c. Working with Schedules
  10. **Creating Drawing Sheets and Plotting**
    - a. Creating Drawing Sheets
    - b. Creating Duplicate Dependent Views
  11. **Creating 3D Views**
    - a. Three Dimensional Views
  12. **From Rendering to Walkthroughs**
    - a. Working with Materials
    - b. Rendering in Revit Architecture
    - c. Creating a Walkthrough
  13. **Using Advanced Features I**
    - a. Creating Structural Components
    - b. Using Area Analysis Tools
  14. **Using Advanced Features II**
    - a. Worksharing Concepts
    - b. Working with Linked Models
    - c. Project Standards and Browsers
    - d. Revit Architecture Interoperability

## Evaluation & Grading

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1. 4 CEUs awarded upon completion of the course material.
  2. Grade: Satisfactory or Unsatisfactory
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# Autodesk Navisworks Manage Syllabus

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## Course Description

The Navisworks online class covers the basic functions of Autodesk Navisworks. Students will be introduced to the concepts of Navisworks model exploration, 3D model navigation, clash detection, timeline simulation, and walkthroughs visualization.

## Course Objectives:

1. Become familiar with the navigation functions of Navisworks
  2. Understand the relationship between the 3D authoring tool and Navisworks validation tools
  3. Learn how to setup views for camera Animation
  4. Compare Selection Sets versus Search Sets
  5. Build a comfort level using Clash Detection
  6. Understanding of the process for Timeline sequencing & Phasing
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# Class Outline and Topics:

## Outline

## Topics

### Introduction



Overview  
Workspaces  
Navisworks Options  
Opening, Appending & Merging Files  
File Types, Saving, Exporting and Publishing Projects  
Navigation Tools, Viewpoints, Object Properties  
Selection Tree and Selection Sets  
Object Selection, hiding and un-hiding  
Enable Sectioning (plane and section box)  
Model Review: Measuring, Tagging, Comments and Redlining  
Exporting NWD files for archiving and Freedom Viewer

### Animator

Creating an Camera Animation  
Manipulating views, Animation Edit  
Exporting Animation videos

### Clash Detection

Creating Search Sets  
Clash Detection Setup  
Creating and Exporting Clash Tests  
Setting Rules, Selecting Search Sets, Setting Tolerances  
Running Tests & Analyzing Clash Results  
Exporting Clash Reports (HTML Tabular format)

## Outline

## Topics

### Timeliner

- Opening and running a Timeline Simulation
- Creating Search Sets
- Establishing Tasks
- Assigning Tasks to model elements
- Linking Project Schedules
- Configuring Tasks Types
- Analyzing the Gantt View
- Timeliner Simulation Settings
- Exporting a Timeliner Animation



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# AutoCAD Architecture

## Introduction

In addition to the standard AutoCAD® software tools, the AutoCAD® Architecture software offers a host of features that greatly increase the speed and efficiency of architectural drawings. The software is designed to work from first concept (conceptual design or mass model) through to design development, working drawings, and facility maintenance.

*AutoCAD® Architecture Fundamentals* focuses on the design development, construction documentation, and visualization features of the AutoCAD Architecture software (the basic tools that the majority of students require when working).

### **The main topics covered include:**

Creating basic floor plans with walls, doors, and windows.

Creating specialty objects, such as column or ceiling grids, stairs & railings.

Adding roofs and floor slabs.

An introduction to Projects and the Project Navigator.

Adding furniture, fixtures, and equipment.

Creating details.

Displaying elevations, sections, and perspectives.

Marks, tags & schedules, and other documentation.

Drawing cameras, adding lights, and basic rendering.



## Prerequisites:

Students should have a solid background in the AutoCAD software because AutoCAD tools and concepts are essential for working with the AutoCAD Architecture software. In particular, students should be familiar with the basic 3D viewing tools (preset views, 3D Orbit, and Visual Styles), layouts, Paper Space/Model Space issues, and external references (XREFS). A working knowledge of the Ribbon interface is helpful but not essential, as pertinent tools are covered in the training guide.

# Table of Contents

## Introduction to AutoCAD Architecture

- Understanding the Software
- User Interface
- Viewing in 3D

## Basic Wall Construction

- Adding Walls
- Modifying Walls
- Creating Curtain Walls

## Creating Wall Openings

- Adding Wall Openings
- Accessing Styles with Style Manager
- Modifying Wall Openings

## Structural Design

- Creating Custom Column Grids
- Modifying Custom Column Grids
- Annotating Custom Column Grids
- Working with Structural Members
- Working with Standard Column Grids (Optional)

## Reflected Ceiling Plans

- Creating Ceiling Grids
- Modifying Ceiling Grids
- Inserting Ceiling Fixtures



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## Vertical Circulation

- Adding Stairs
- Modifying Stairs
- Adding Railings
- Modifying Railings

## Floors

- Creating Floor Slabs
- Modifying Floor Slabs
- Editing Slabs Using Slab Tools

## Roofs

- Creating Roofs
- Modifying Roofs
- Working with Roof Slabs
- Modifying Roof Slabs

## Fixtures, Furnishings, and Equipment

- Furnishing the Building Design
- Adding Blocks to the Tool Palettes

## Introduction to Drawing Management

- Project Concepts
- Using the Project Navigator

## Building Model Views

- Boundary and Detail Callouts
- Elevations and Building Sections
- Modifying Callout Objects
- Using Live Sections

## Annotation

- Drawing Scale for Annotation
- Adding Text and Leaders
- Dimensioning in the Software
- Other Annotation Tools

## Scheduling

- Adding Door and Window Tags
- Editing Tag Data
- Adding Schedules
- Editing Schedules

## Creating Details

- Creating Details from Tool Palettes
- Using the Detail Component Manager
- Annotating Details with Keynotes



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## Visualization

Working with Cameras  
Managing Camera Views  
Specifying Light Sources  
Rendering Concepts

## Appendix A Visual Styles and Animation

Creating Visual Styles  
Animating with ShowMotion  
Motion Path Animations

# Dynamo for Revit Fundamentals Syllabus

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## Course Description

Dynamo is a powerful BIM connected Computational Design tool. With access to the Revit Application Programming Interface (API), Dynamo allows you to perform repetitive and more advanced functions within Revit. Learning Dynamo is a great way for creating new opportunities to transform your business, offer new services, and enhance the overall quality of your projects. From exploring design alternatives to rule based system rationalization to automating repetitive tasks, Dynamo will play an important role in your AEC workflows. Dynamo's usefulness extends from Architectural Programming to Building Performance Analysis, Simulation, Construction Means and Methods, as well as Process Automation. This course introduces the student to the fundamentals of Dynamo with hands on exercises providing practical examples everyone can exploit in their work.

## Course Objectives:

- Understand the role of Computational Design & Visual Programming in the AEC Process
- Explore Key uses for Dynamo
- Learn about Dynamo integration with Revit
- Create basic Dynamo Scripts
- Use the Dynamo Player on real-world projects