

# **Autodesk Navisworks Essentials**

## **Target Audience**

This course is intended for architects, engineers, construction professionals, and BIM coordinators who are new to Autodesk Navisworks and want to learn the essential tools for project review, coordination, and clash detection in collaborative BIM environments.

## **Course Objective**

The objective of this course is to provide participants with the skills to efficiently navigate, review, and manage 3D models in Autodesk Navisworks, facilitating improved coordination, issue detection, and project visualization.

## **Course Outcome**

- Learn to navigate and manipulate 3D models in Autodesk Navisworks for effective project review.
- Understand how to perform clash detection and resolve design conflicts across multi-disciplinary models.
- Develop skills in creating animations and walkthroughs to enhance project presentations.
- Gain proficiency in generating coordination reports and managing project collaboration using tools like Navisworks Manage.

**Course Outline:** The course comprises **40 -hours** of theory and labs and is divided into **9** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.



## Chapter 1. Introduction to Autodesk Navisworks

### Introduction

#### Basic Features of Navisworks Manage

- Navigation and Reviewing Tools
- TimeLiner
- Quantification
- Clash Detection
- Autodesk Rendering
- Animator and Scripter

#### Benefits of Navisworks

#### Starting Autodesk Navisworks

#### User Interface

- Title Bar
- Quick Access Toolbar
- InfoCentre
- Application Menu
- Ribbon
- Scene View
- Navigation Bar
- ViewCube
- Dockable Windows
- Status Bar

#### Autodesk Navisworks Dialog Boxes

#### Configuring Settings in Navisworks

- Configuring the Local Settings
- Configuring the Global Settings

#### Keyboard Shortcuts

#### File Types in Navisworks

- NWC File Format
- NWD File Format
- NWF File Format

#### File Readers

#### Managing Files in Navisworks

#### Opening Files

#### Appending Files

#### Merging Files

#### Saving Files



Publishing Files

Emailing Files

Working with Batch Utility

- Creating a List of Design Files
- Appending Multiple Files into a Single Navisworks File
- Converting Multiple Files into Single NWD File

Sharing Data in Navisworks

- Printing Files
- Importing Files
- Exporting Files
- Exporting Images and Animations
- Export Data

Setting Units in Navisworks

Navisworks Workspaces

- Safe Mode
- Navisworks Extended
- Navisworks Standard
- Navisworks Minimal

Autodesk Navisworks Help System

- Using the Offline Help
- Using the Autodesk Online Help
- Using the Context Sensitive Help

## **Chapter 2. Exploring the Navigation Tools in Navisworks**

Introduction

Using the Head-Up Display Feature

Setting View Orientations

The ViewCube

The Navigation Bar

- Pan Tool
- Zoom Tools
- Orbit Tools
- Look Tools
- Walk and Fly Tools
- SteeringWheels

Camera

Reference Views



## Chapter 3. Selecting, Controlling, and Reviewing Objects

### Introduction

#### Object Selection Methods

- Direct Selection Method
- The Selection Tree Window
- Setting Selection Resolution
- Find Items Window
- Quick Find

#### Saving Selections

- Selection Sets
- Search Sets
- The Selection Inspector Window

#### Object Properties

- Properties Window

#### Linking External Databases to Objects

- Adding Database Link Locally
- Adding Database Link Globally

#### Measure Tools

- Point to Point Tool
- Point to Multiple Points Tool
- Point Line Tool
- Accumulate Tool
- Angle Tool
- Area Tool
- Shortest Distance Tool
- Clear Tool
- Convert to Redline Tool

#### Direction Constraints for Measurements

- X Axis Tool
- Y Axis Tool
- Z Axis Tool
- Perpendicular Tool
- Parallel Tool

#### Redline Tools

- Adding Text to Redline
- Drawing Cloud



### Tags and Comments

- Adding Tags
- The Comments Window
- The Find Comments Window

### Comparing Models

- Find Differences In
- Results

### Controlling the Visibility of Objects

### Controlling the Appearance of the Model in the Scene View

### Controlling Object Attributes

- Controlling Object Attributes using Gizmo
- Controlling Object Attributes Numerically

### Links

- Types of Links
- Customizing Appearance of Links in the Scene View
- Adding Links
- Managing Links

### The Appearance Profiler Window

- Selector Area
- Appearance Area
- Selector List Area

## Chapter 4. Viewpoints, Sections, and Animations

### Introduction

### Working with Viewpoints

- Saving Viewpoints
- Organizing Viewpoints
- Editing Viewpoints
- Sharing Viewpoints

### Sectioning in Navisworks

- Creating Section Views Using Planes Mode
- Transforming Section Planes
- Linking Section Planes
- Creating Section Views Using the Box Mode
- Transforming Section Box



### Animation in Navisworks

- Creating Viewpoint Animations By Recording
- Creating Viewpoint Animations Frame By Frame
- Playing Viewpoint Animations
- Combining Multiple Animations
- Editing Viewpoint Animations
- Sharing Animations

## Chapter 5. TimeLiner

### Introduction

#### Introduction to Timeliner

#### The Timeliner Window

- Tasks Tab
- Data Sources Tab
- Configure Tab
- Simulate Tab

#### Playing Simulation

#### Exporting Animation from the TimeLiner

#### Adding Animation to the TimeLiner

- Adding Animation to the Entire Schedule
- Adding Animation to Tasks

#### TimeLiner Costs

#### Importing Schedules From External Scheduling Software

## Chapter 6. Working with Animator and Scripter

### Introduction

#### The Animator Window

- Animator Toolbar
- Animator Tree View
- Animator Timeline View

#### Creating Object Animations

- Creating Object Animation Using the Animation Set
- Creating Animation Using Camera
- Creating Animation Using the Section Plane

#### Editing Keyframes

- Editing Animation Set Keyframes
- Editing Camera Keyframes



- Editing Section Plane Keyframes

#### The Scripter Window

- The Scripts Area
- The Events Area
- The Actions Area
- The Properties Area

#### Enabling Scripts

## Chapter 7. Quantification

### Introduction

#### Quantification Workbook Window

- Components of Quantification Workbook Window
- Creating a Project
- Item Catalog
- Resource Catalog

#### Takeoff Methods

- Model Takeoff
- Virtual Takeoff
- 2D Takeoff

## Chapter 8. Clash Detection

### Introduction

#### Clash Detective Window

- Test Panel
- Rules Tab
- Select Tab
- Results Tab
- Report Tab

#### Managing Clash Tests

- Merging Clash Tests
- Creating Custom Clash Tests

#### Linking Clash Test with Timeliner and Object Animation

- Time-Based Clash Test
- Soft Clashing
- Time-Based Soft Clashing

#### Customizing Clash Detective Window

#### Creating Clash Report



## Chapter 9. Autodesk Rendering in Navisworks

### Introduction

#### The Autodesk Rendering Window

- The Rendering Toolbar
- Materials Tab
- Material Mapping Tab
- Lighting Tab
- Environments Tab
- Settings Tab

#### Rendering Using Autodesk Graphics

#### Rendering Using Autodesk 360

