

Autodesk **InfraWorks** Essentials

Target Audience

This course is designed for civil engineers, urban planners, infrastructure designers, and CAD professionals who want to develop skills in creating data-rich 3D conceptual design models using Autodesk InfraWorks. It is ideal for professionals working on roadway, bridge, railway, tunnel, and drainage design projects who need to evaluate design alternatives and communicate 3D site plan proposals to stakeholders early in the project lifecycle.

Course Objective

This course aims to provide learners with a fundamental knowledge of the accelerated design process that uses data-rich 3D models with high-end visualizations. Participants will learn to navigate the InfraWorks interface, connect to and stylize GIS and CAD data sources, create and modify planning and component roads with intersections and roundabouts, design bridges, railways, and tunnels, run watershed analyses and build drainage networks, add supporting model details such as buildings, parking, and vegetation, and communicate design proposals to stakeholders.

Course Outcome

Upon completion of this course, learners will be able to confidently navigate the Autodesk InfraWorks interface and work with proposals, connect to and stylize GIS and CAD data sources, create planning and component roads with precise parameters and intersections, run watershed analyses and design culverts, water features, and pavement drainage networks, model bridges, railways, and tunnels, add buildings, city furniture, vegetation, and other model details, analyze designs using themes, suitability maps, line of sight, and shadow studies, and communicate the design to stakeholders using images, shared views, and storyboards.

Course Outline: The course comprises **40 hours** of theory and practical labs and is divided into **9** comprehensive chapters covering advanced road tools and point cloud modeling. Each topic is followed by hands-on lab exercises to reinforce learning and gauge understanding of the material covered.



Chapter 1: Navigating the User Interface

- Building Information Modeling
- Launching the software
- Overview of the interface
- Home screen
- Model view
- Navigating the model
- Mouse navigation
- ViewCube
- Bookmarks
- Other navigation tools
- Basic commands
- Selecting features
- Shortcut commands
- Command search
- Gizmos
- Working with proposals
- Proposals panel

Chapter 2: Connecting to Data Sources

- Geographic Information Systems overview
- Sample GIS data
- Model Builder
- Finding GIS data
- Geographic coordinate systems
- Metadata and units
- Connect to data sources
- File data sources



- Database data sources
- Autodesk Connector for ArcGIS
- Configure and display data sources
- Data source configuration
- Expressions
- Model Explorer

Chapter 3: Stylize Data Sources

- Using multiple styles to display features
- Create filter expressions
- Using scripts to set multiple feature styles
- Create style rules
- Reuse/share style rules
- Overriding style rules
- Create and share styles
- Catalogs
- Styles

Chapter 4: Roadways

- Create planning roads in a model
- Edit planning roads
- Parcels, right of ways, and easements
- Import property boundaries
- Create parcels and easements
- Create right of ways
- Creating component roads
- Road function
- Horizontal curves and spirals
- Design standard warnings



- Add detail to component roads
- Reuse assemblies
- Modifying horizontal layouts
- Horizontal gizmos
- Component road asset card
- Road annotation
- Roadside grading
- Modifying vertical layouts
- Vertical gizmos
- Profile view
- Curve properties
- Component road superelevation
- Working with intersections
- Junction type
- Turning zone
- Lane markings
- Roundabouts

Chapter 5: Waterways and Drainage

- Watershed analysis
- Modify peak flows
- Create and modify culverts
- Add culverts automatically
- Create culverts manually
- Modify a culvert
- Create water features in a model
- Create pipe networks in a model
- Pipeline connectors
- Create pipelines



- Edit pipelines
- Pavement drainage
- General workflow
- Input rainfall quantities
- Create a network
- Modify drainage networks
- Size drainage network
- Analyze pavement drainage

Chapter 6: Bridges, Railways, and Tunnels

- Bridge components
- Modify bridges
- Bridge asset card
- Bridge gizmos
- Bridge properties
- Clipping planes
- Bridge line girder analysis
- Girders and girder analysis
- Project information
- Detail design for bridges
- Preparing a bridge for Autodesk Revit
- Open a bridge in Autodesk Navisworks
- Create railways in a model
- Create and edit railways
- Create tunnels in a model

Chapter 7: Add Model Details

- Create coverages in a model
- Edit coverages



- Grading areas
- Grading styles
- Edit grading areas
- Set cut/fill slopes
- Parking tools
- Parking areas
- Parking layouts
- Parking rows
- Create buildings in a model
- Edit buildings
- Create city furniture in a model
- Add vegetation to a model
- Edit vegetation
- Add miscellaneous details to a model
- Barriers
- Points of interest
- Working with Autodesk Revit models
- Render detail and repair model

Chapter 8: Analyzing the Model

- Theme a data source
- Feature themes
- Terrain themes
- Suitability maps
- Layer subsets
- Line of sight analysis
- Measure the model
- Analyze shadows
- Visual effects



- Sun & Sky settings

Chapter 9: Communicate the Design to Stakeholders

- Creating images
- Snapshots
- View settings
- Shared views
- Shared Views panel
- Autodesk Viewer
- Measure and markup
- Working with storyboards
- Working with the timeline
- Adding keyframes
- Keyframe settings
- Add captions and titles
- Reusing storyboards
- Create and share storyboard videos
- Additional storyboard tools

