Autodesk Civil 3D: Mastering Essential workflows with Road design, Grading, Survey & Quantity take off

1. TARGET AUDIENCE:

This comprehensive training is intended for civil engineers, surveyors, designers, estimators, and infrastructure professionals who want to master Autodesk Civil 3D. It provides foundational knowledge and advanced, practical skills in using essential tools for the design and management of civil engineering projects, prioritizing real-world applications in road design, site grading, survey data processing, and project estimation.

2. COURSE OBJECTIVE:

Prepare for real-world project execution by gaining the comprehensive skills used by industry professionals. This course covers essential infrastructure workflows including point and parcel management, surveying, surface modelling, grading, alignments and profiles, corridors and sections, quantity take-off reporting, and plan production with data management. Through guided lessons, hands-on datasets, and practical exercises, learners will build the competence needed to confidently apply Civil 3D effectively from initial survey to final end-to-end infrastructure design and estimation.

3. COURSE OUTCOME

- Process survey data, manage COGO points, and create or subdivide land parcels.
- Model and analyse existing and proposed terrain surfaces, and design complex site grading solutions.
- Design linear infrastructure using alignments, profiles, assemblies, and dynamic corridors.
- Extract critical project data, perform material computations, and generate accurate quantity take-off reports.
- Utilize workflows for comprehensive plan production, including view frames, sheet creation, and data shortcuts.

4. COURSE OUTLINE:

The course comprises **56-hours** of theory and labs and is divided into **10 different chapters**. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

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AUTODESK
Authorized Training Center

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- Introduction to AutoCAD Civil 3D
- Basic Features of AutoCAD Civil 3D
- Points and Point Groups
- Surfaces, Alignments, Profiles, and Profile Views
- Assemblies and Subassemblies
- Corridors, Parcels, and Grading
- Sections, Pipe Networks, and Pressure Pipe Networks
- Superelevation View
- Starting AutoCAD Civil 3D and User Interface
- Drawing Area, Ribbon, Application Menu, and Command Bar
- Drawing File Tabs and Status Bar
- TOOLSPACE Palette and Shortcut Menu
- Layout Tools, Autodesk Account, and Panorama Window
- Civil 3D Workspaces (Civil 3D, Drafting & Annotation, 3D Modelling, Planning and Analysis)
- Getting Started with AutoCAD Civil 3D (Drawing Templates and Drawing Settings)

Chapter 2. Points and parcels

- Introduction to points
- Create COGO Points
- Specify point parameters
- Assign point styles and point label styles
- Create description key sets
- Rotate point markers and labels
- Create and assign point styles
- Create and assign point label styles
- Edit point properties
- Create point groups
- Change point group display order
- Introduction to parcel creation
- Create parcels by layout
- Create parcels from objects
- Subdivide existing parcels
- Associate parcels with sites
- Work with parcels
- Label parcels
- Create parcel tables
- Renumber and rename parcels
- Create and modify parcel styles

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- Create and modify parcel label styles
- Delete parcels

Chapter 3. Surveying

- Introduction to the surveying tools
- Work with linework code sets
- Set up a survey database
- Work with the survey figure prefix database
- Work with the Traverse Editor
- Perform a map check analysis

Chapter 4. Surfaces

- Introduction to surfaces
- Define surfaces with data categories
- Control the display of a surface
- Define surface boundary types
- Access and review surface statistics
- Create a TIN surface
- Edit a TIN surface
- Edit the properties of a surface definition
- Create a TIN volume surface
- Create surface labels
- Add contour labels
- Use surface analysis
- Set analysis parameters for surfaces
- Perform a surface analysis

Chapter 5. Grading

- Create feature lines
- Edit horizontal data for feature lines
- Edit elevations for feature lines
- Work with objects on same site
- Create and modify sites
- Create grading groups
- Create grading with grading creating tools
- Work with grading criteria

Chapter 6. Alignments

- Introduction to alignments
- Create alignments with and without curves

- Add curves, lines, and spirals to an alignment
- Create alignments from objects
- Create an alignment from a pipe network
- Create offset alignments
- Create widenings for an alignment
- Add labels to alignments
- Add station offset labels to alignments
- Create tag labels for alignments
- Add label sets to alignments
- Add and edit alignment tables

Chapter 7. Profiles

- Create a surface profile
- Create a profile view
- Compare components of a profile view
- Identify object types in a profile view
- Create a profile with the Quick Profile tool
- Split a profile view
- Create and modify a profile
- Edit layout profiles
- Work in the profile grid view
- Add a vertical curve to a profile
- Grip edit a profile
- Add labels to profile views
- Add label sets to profiles

Chapter 8. Corridors and sections

- Create basic assemblies
- Create a corridor
- Rebuild a corridor
- Create a multiple baseline corridor
- Set targets for corridors
- Remove corridor bowties
- Create objects from a corridor
- Create sample lines
- Edit sample lines
- Create section views
- Create section sheets
- Compute materials

Chapter 9. Quantity take-off and reporting

- Set up the QTO Manager
- Define complex material lists and sub-criteria for structural earthwork
- Generate custom reports
- Export and customize volume, earthwork, and quantity reports

Chapter 10. Plan production and data management

- Create view frames
- Create a sheet from a view frame group
- Use data shortcuts and external references
- Manage data shortcuts
- Create a data reference
