Autodesk AutoCAD & Civil 3D Essentials for Survey, Surface & Roadway Design

Target Audience

This course is intended for civil engineers, surveyors, CAD technicians, draftsmen, and infrastructure professionals who are involved in land development, road design, and site engineering projects. It is also suitable for graduates and working professionals who have basic AutoCAD knowledge and want to transition to AutoCAD Civil 3D.

Course Objective

The objective of this course is to provide practical, hands-on training in AutoCAD and Civil 3D, focusing on real-world civil engineering workflows. The program covers project setup, survey data management, surface and profile creation, earthwork calculations, and plotting, enabling participants to understand and apply industry-standard design processes.

Course Outcome

By the end of this course, participants will be able to confidently use AutoCAD and Civil 3D to manage survey data, create 3D surfaces and roadway profiles, calculate cut and fill quantities, and produce professional, plot-ready civil drawings suitable for real infrastructure projects.

Course Outline:

The course consists of **24 hours of instructor-led theory and hands-on practical labs**, structured into **9 comprehensive chapters**. Each chapter is followed by **guided lab exercises** designed to reinforce key concepts and evaluate participants' understanding of the covered topics.

Module 1: AutoCAD & Civil 3D Overview

- Introduction to AutoCAD and Civil 3D
- Understanding the Civil 3D workflow
- AutoCAD vs Civil 3D

Module 2: User Interface & Workspace Customization

- Customizing menus, toolbars, and visual workspaces
- Application Menu, Ribbon, Quick Access Toolbar
- ViewCube, Info Center, and Status Bar

Module 3: Project Setup & Drawing Management

- Starting drawings using templates (DWT)
- Drawing settings, units, and coordinate systems
- Layers, object properties, and styles

Module 4: Working with Drawing Components

- AutoCAD objects vs Civil 3D objects
- Blocks and External References (Xrefs)
- Object visibility and display controls

Module 5: Point Management & Survey Data

- Creating and managing points
- Point groups and styles
- Importing Survey Fieldbook data

Module 6: Survey Traverse Adjustment

- Survey traverse concepts
- Balancing traverse using Compass Rule
- Validation and error checking

Module 7: Surface Creation & Terrain Modeling

- Creating 3D surfaces
- Generating ground contours
- Surface editing and analysis

Module 8: Profile & Roadway Design Basics

- Creating alignments
- Creating existing ground and roadway profiles
- Profile labeling and styling

Module 9: Earthwork Calculation & Plotting

- Cut/fill volume calculation between surfaces
- Configuring plotters and page setups
- Creating and managing Plot Styles (CTB/STB)