

## CIVIL 3D ESSENTIALS

<b>Duration:</b>	24 hours
<b>Prerequisite:</b>	Working knowledge of a Windows OS and the basics of AutoCAD
<b>Learning Units:</b>	Valid for 24 LU's

### OBJECTIVE

This course will instruct you on the essentials of AutoCAD Civil 3D and covers a number of topics that relate to the civil engineering discipline, including land development, transportation engineering and utility and infrastructure design.

### TOPICS INCLUDE

**INTRODUCING AUTOCAD CIVIL 3D** As an introduction to this course, attendees will become familiar with the Civil 3D ribbon interface as well as with some of the common dialog windows encountered in day-to-day design.

**THE LAY OF THE LAND: SURVEY AND POINTS** Attendees will touch upon the basics of creating and editing survey information and traditional point data as well as learn the underlying relationships between point data and surface creation. In addition, the control of Civil 3D points using description keys and groups will be explored alongside several methods of importing in data from external sources for use.

**GROUNDBREAKING: CIVIL 3D SURFACES** This portion of the class will focus on the various methods for creating and making changes to Civil 3D surfaces. Students will become familiar with the process by which Civil 3D creates surface geometry and how to leverage Civil 3D to run complex analyses on these surfaces.

**WORKING AS A TEAM: DATA SHORTCUTS** The basics of using Data Shortcuts to exchange project data in real-time will be examined here. Additionally, other means of sharing information, such as using Vault and the Autodesk Data Management Server, will be discussed alongside the benefits/detriments of using one method over another.

**THE WINDING ROAD: ALIGNMENTS** The creation, editing and labeling of horizontal control elements will be covered in this section. Attendees will have a basic understanding of the relationships between alignment lines and curves and be introduced to the fundamentals of rule-based road design as per AASHTO standards.

**UP A HILL, DOWN A MOUNTAIN: PROFILES AND PROFILE VIEWS** Students will look at and familiarize themselves with the sampling and creation methods for establishing vertical control elements. In addition time will be spent investigating options for building profile views to reflect the formats your design practice may require for production drawings.

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**RUBBER MEETS THE ROAD: CORRIDORS** The means and methods of creating corridors will be the focus of this section, beginning with an introduction to Civil 3D assemblies for defining cross-sectional design elements. Then, using a combination of horizontal, vertical and cross-sectional objects students will create a corridor and learn the correlational and dynamic relationships that are established amongst the involved design elements used in creating the corridor.

**THE X-FILES: CROSS-SECTIONS** As a natural extension of the previous section, attendees will generate cross-sections and section views by sampling Civil 3D corridors and surfaces created in prior exercises. Additionally, surface volume and material calculations tools will be explored.

**DOCUMENTATION: PLAN PRODUCTION TOOLS** Students will learn the steps and benefits of generating cut sheets using Civil 3D View Frames in this section. A step-by-step walk through the wizards used in generating production drawings will be followed with a brief discussion sheet templates and basic functionality of the Sheet Set Manager.

**COUNTING BEANS: QUANTITY TAKEOFF** This section will allow for a short introduction into the various means of assigning pay item data using the Civil 3D quantity takeoff toolset and predetermined item lists. Subsequently, attendees will learn how to generate reports for items that have been assigned pay items.

**SUBDIVIDE AND CONQUER: PARCELS** Participants will gain an understanding of some of the most common parcel creation tools in this section, in conjunction with a discussion on Civil 3D Site-specific design elements. Students will also learn how label and generate simple reports of their subdivided parcels.

**GETTING YOUR HANDS DIRTY: GRADING** The main focus of this segment is to establish a general understanding of grading using criteria sets and feature lines. Simple examples for berms/detention basins will be explored in addition to a straightforward commercial site that leverages several of the many feature line edit tools. Grading volume tools will also be explored with a focus on balancing a site's cut-fill quantities.

**IT ALL FLOWS DOWNHILL: PIPE NETWORKS** Attendees will gain an overall understanding of creating, editing, labeling and reporting pipe networks in plan and profile views. Participants will also delve into the creation of part lists and styles for the manipulation of pipe networks for production quality drawings.

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