COURSE SYLLABUS

Civil 3D Certificate Program

Develop the skills to design and refurbish public infrastructure using AutoCAD Civil 3D. This hands-on program prepares you for a career in civil engineering, focusing on 3D modeling, data management, and real-world project applications.

> Group classes (Live Online) and onsite training are available for this course. For more information, email partnerships@vdci.edu or visit: https://vdci.edu/certificates/civil-3d-certificate-program



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Course Outline

This package includes these courses

- Intro to AutoCAD Course Online (30 Hours)
- Intermediate AutoCAD Course Online (30 Hours)
- Surveying & Mapping Civil 3D Course Online (30 Hours)
- Transportation Design Civil 3D Course Online (30 Hours)
- Land Development Civil 3D Course Online (30 Hours)
- Civil 3D Certificate Elective Courses (80 Hours)
- Capstone Project (60 Hours)

Intro to AutoCAD Course Online

Learn AutoCAD in this beginner-friendly online course. You'll start by drawing drafting symbols and common kitchen and bath fixtures, then create a complete floor plan and assemble everything into a single deliverable sheet file. The course introduces the AutoCAD interface and commands, including drawing and modifying tools, layering standards, text, dimensioning, and plotting.

- Create drafting symbols, kitchen and bath fixtures, and a complete floor plan, then integrate all elements into one deliverable sheet file
- Understand the difference between drawings used for annotation and those used as real-world model components
- Create, insert, and manage blocks and external references, and learn when each should be applied
- Practice file management, drafting on layers, integrating drawing component files, and plotting while completing the residential project

Intermediate AutoCAD Course Online

In this course, you'll create an abbreviated set of CAD construction documents for a Habitat for Humanity project, including floor, roof, foundation, and electrical plans, plus building elevations. You'll use blocks and external references to link drawings and improve workflows while reinforcing core AutoCAD skills and learning advanced techniques such as file referencing,

coordinate systems, dynamic viewing, and model and paper space conventions.

- Create an abbreviated set of construction documents, including floor plan, foundation plan, electrical plan, and building elevations for a small residential project.
- Create and insert blocks, externally reference files, and determine the appropriate times to apply those skill sets to optimize project efficiency.
- Demonstrate layer and file management, external file referencing, use of model/layout environments, and user coordinate systems.
- Apply intermediate-level skills, including layer management, user coordinate system development, creating sheet layout environments, and plotting.

Surveying & Mapping Civil 3D Course Online

In the Intermediate Civil 3D: Surveying and Mapping course, students learn how to manage survey data by creating, labeling, and organizing points, preparing key sets, and working with parcel and surface data in Civil 3D. The course guides students through importing survey data, subdividing parcels, and adjusting display styles to support professional surveying and mapping workflows.

- Create, label, and modify points, then organize them into point groups
- Prepare Civil 3D description key sets, linework code sets, and figure prefix databases
- Perform survey imports and create and subdivide parcels
- Modify parcel display styles and label parcel areas and segments
- Create parcel tables and generate a TIN surface
- Label surfaces and edit surface definitions
- Perform surface analysis

Transportation Design Civil 3D Course Online

This Civil 3D course is designed for professional designers, engineers, contractors, and others looking to advance their careers or expand their employment opportunities. Focusing on intermediate civil engineering tools, the course introduces transportation design workflows in Civil 3D, including alignments, profiles, corridors, intersections, cross sections, and 3D visualization used in real-world roadway design.

- Create multiple types of alignments
- Develop surface profiles and design profiles
- Adjust and manage profile view windows
- Label alignments and profiles
- Build corridors with required sub-elements, including a cul-de-sac
- Create intersection corridors and generate sample lines along corridors
- Display and review cross sections
- Visualize roadway designs with a 3D drive-through

Land Development Civil 3D Course Online

In this Civil 3D course, you'll learn land development design tools and workflows used in professional projects, including drawing templates, data shortcuts, feature lines, grading groups, pipe networks, pressure networks, and paper space. Designed for designers, engineers, contractors, and others seeking career advancement or transition, the course focuses on building practical CAD skills within the Civil 3D environment.

- Create and apply multiple Civil 3D object and label styles
- Develop a custom drawing template file
- Manage data shortcuts for efficient project coordination
- Create and edit feature lines and grading groups
- Work with pipe and pressure parts catalogs
- Lay out and annotate pipe and pressure networks
- Create a custom drawing sheet for final deliverables

Civil 3D Certificate Elective Courses

Select 60-80 clock hours of elective courses to complement your Civil 3D Certificate Program training. You can specialize in AutoCAD, Revit Architecture, or SketchUp Pro.

Capstone Project

The VDCI Capstone Project course empowers students to apply their acquired skills in a real-world, project-based environment. Participants will complete a comprehensive design or construction project from concept to execution, showcasing their expertise in software like AutoCAD, Revit, or other industry-standard tools. This hands-on experience prepares students to excel in professional roles by demonstrating their ability to manage and deliver complex, detail-oriented projects.