COURSE SYLLABUS

CAD/BIM Certificate Program

Build expertise in both AutoCAD and Revit to excel in drafting and building information modeling (BIM). This program prepares you for a dynamic career in the construction and design industries through hands-on, real-world projects.

Group classes in Live Online and onsite training is available for this course. For more information, email partnerships@vdci.edu or visit: https://vdci.edu/certificates/cad-bim-certificate-program

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Course Outline

This package includes these courses

- Intro to AutoCAD Course Online (30 Hours)
- Intermediate AutoCAD Course Onlne (30 Hours)
- AutoCAD Construction Documents I Course Online (30 Hours)
- AutoCAD Construction Documents II Course Online (30 Hours)
- Intro to Revit Course Online (30 Hours)
- Intermediate Revit Course Online (30 Hours)
- BIM Construction Documents I Course Online (30 Hours)
- BIM Construction Documents II Course Online (30 Hours)
- Capstone Project (0 hours)

Select **100-120 clock hours** of elective courses to complement your Certificate Program training.

CAD/BIM Certificate Elective Courses

Intro to AutoCAD Course Online

Learn AutoCAD online from the very beginning, drawing drafting symbols, kitchen and bath fixtures, and then a floor plan. We assemble everything into one deliverable sheet file. In this Introduction to AutoCAD class, become familiar with the AutoCAD user interface and basic AutoCAD commands, including Drawing, Modifying, Layering Standards, Text, Dimensioning and Plotting. You will draw a floor plan for a small Habitat for Humanity residential project, starting at the very beginning. You will be provided source AutoCAD files, which you will use to start your project.

- Create drafting symbols, kitchen and bath fixtures, a floor plan and integrate all information into one deliverable sheet file.
- Distinguish the differences required to generate drawings for use as annotation and real-world model components.
- Create and insert blocks and externally reference files and determine the appropriate times to apply those skill sets.
- Master file management, drafting on layers, integrating drawing component files and plotting while creating on the class residential project.

Intermediate AutoCAD Course Onlne

In this course, you will draft an abbreviated set of CAD construction documents for a Habitat for Humanity project, including floor plan, roof plan, foundation plan, electrical plan, and building elevations. Create and insert blocks, externally reference files, and determine the appropriate times to use these commands to optimize project workflow. Create, insert, and link drawings. You will learn the best workflow. This course reinforces basic understanding of AutoCAD and develops experience in more advanced applications. Topics include file referencing across the project data, user coordinate systems, dynamic viewing, and paper/model space conventions. Advanced AutoCAD commands and drafting conventions are heavily stressed in this online AutoCAD course.

- 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 environment,s and user coordinate systems.
- Apply intermediate-level skills including layer management, user coordinate system development, creating sheet layout environments, and plotting.

AutoCAD Construction Documents I Course Online

In this course, we use AutoCAD to d evelop titleblock drawings from scratch, draft a floor plan, multi-scale enlarged plans, roof plan and building elevations for a more complicated one-story residence. You will learn important, relevant & practical CAD workflow skills, including AutoCAD commands, menuing systems and project workflow. The course covers two-dimensional (2D) drawing commands and drafting techniques for developing construction documents, including dimensioning, layout environments, layering systems and plotting.

- Create titleblock and titleblock/drawing label components for a professional office to facilitate development of deliverable sheet files.
- Create floor plan, enlarged plan, roof plan and building elevation of a moderately complex residential project. Includes the development of floor plan, roof plan and elevation notes.
- Successfully integrate referenced files to create construction documents. Demonstrate layer and file management, use of model/layout environments and multi-scale drawing presentation.
- Organize deliverable sheet set to conform to the National CAD Standards.
- Apply intermediate-level skills to create sheet layout environments and plotting.

AutoCAD Construction Documents II Course Online

AutoCAD Construction Documents II is an advanced-level course designed to elevate your expertise in producing professional construction documents using AutoCAD. This course builds upon fundamental drafting and AutoCAD skills, focusing on the creation of precise, detailed construction drawings that meet industry standards. You will learn how to create cohesive and technically accurate sets of plans, allowing for better communication across various teams within architectural, engineering, and construction project workflows. Throughout the course, you will work on producing detailed layouts, refining annotation techniques, and ensuring consistency across multiple drawing sheets. You'll also explore layer management, plotting styles, and building custom blocks, providing you with a solid foundation to handle complex construction documentation efficiently. By the end of this course, you will have developed a thorough understanding of advanced AutoCAD tools and workflows, empowering you to create professional-level documents for real-world applications.

- Create building elevations, building sections, wall sections; modify detail drawings; create metes and bounds (Civil) drawing; create

relevant deliverable sheet files for a moderately complex residential project. Includes the development of title sheet and appropriate general and keynote legends.

- Successfully integrate referenced files to create construction documents. Demonstrate layer and file management, use of model/layout environments and multi-scale drawing presentations.
- Apply intermediate/advanced-level skills to create sheet layout environments and plotting.
- Organize deliverable sheet set to conform to the National CAD Standards.

Intro to Revit Course Online

In this Intro to Revit course for beginners, you learn how information is interrelated throughout the Revit (BIM) model u sing the Revit Architecture tools. This course examines how Revit users design 3D models that simultaneously document the project and generate 2D architectural drawings containing floor plans, elevations, and 3D perspective views. You will create a Building Information Model starting from a pre-made template, create floor plans, elevations, and 3D presentation views, place views on sheets, and print drawing sheets to PDF. You will be provided both source Revit files, which you will use to start your project, as well as videos that will guide you through the learning process.

- Describe Primary Revit Concepts and how they relate to Building Information Modeling (BIM).
- Explore the Revit User-Interface.
- Design a 3D building model to explain how information is inter-related
- Determine the appropriate workflow to complete tasks within Revit.
- Develop a project that includes floors, walls, ceilings, stairs, curtain walls, and roof design to strengthen 3D modeling and 2D documentation skills.
- Create presentation-level architectural graphics.
- Catalog building information using schedules.

Intermediate Revit Course Online

In this online BIM class, you will learn more advanced methods to document a project in Revit Architecture. Topics include scheduling building components, using the family editor to create 2D and 3D components, refining graphics, and creating an abbreviated set of construction documents. In this online intermediate BIM class, you will explore advanced methods of documenting a building project in Revit Architecture by revising and continuing to develop an existing Revit model, exploring design options, creating custom schedules, and learning the skills required to create custom Revit families. By the end of this course, you will be able to turn a conceptual Revit model into an integrated and interoperable construction document set.

- Integrate DWG Files to create Revit details.
- Tag elements for cost estimation and material take-offs.
- Explore the capabilities of design options and how to present different options.
- Create 3D parametric families.
- Build customized door, material, and room schedules that can be used for construction take-offs.
- Explore BIM project Management techniques to keep models efficient and user-friendly.

BIM Construction Documents I Course Online

This online Revit course is the first of two Construction Document courses, using the Revit Architecture tools. You will model an existing single-story commercial building (importing AutoCAD drawings as a base) and also create a site model. You will continue learning Revit when you create the model for a significant two-story expansion to that first building model. This project

scenario is typical of projects currently being handled by AEC teams who use Revit in their offices. You will explore some of the more advanced methods of modeling a commercial building project in Revit Architecture. Your instructor is an Autodesk Certified Instructor and also an experienced architectural project manager who uses Revit on a daily basis, preparing construction documents for commercial, medical, and biotech projects.

- Apply BIM modeling tools to create an architectural model, including an existing building, partial demolition, and a new construction.
- Build topography for a project using existing external files and develop a site plan, including hardscape and landscaping.
- Graphically differentiate the phasing of a project from existing construction through new construction.
- Produce renderings suitable for presentation and documentation.

BIM Construction Documents II Course Online

You will create construction documents for the commercial building and site created in BIM 301. You will create the sheet drawings and will add keynotes, detail drawings and schedules.

- Prepare a set of architectural construction documents incorporating the site and building models created in BIM 301.
- Develop progress sets of construction documents, reflecting 30/60/90/100 percent deliverable submittals.
- Produce plan, section, and elevation views of the project for sheet layout.
- Keynote elements of the project model. Develop schedules and a limited number of architectural details extracted from the BIM model.

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.