HIGHER TECHNICAL INSTITUTE

CIVIL ENGINEERING

DIPLOMA PROJECT

AUTOCAD

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AutoCAD - Description

Initially a general-purpose 2D drafting program, AutoCAD has evolved into a family of products which provide a platform for 2D and 3D CAD. Today, it is used by civil engineers, land developers, architects, mechanical engineers, Interior Designers and other design professionals.

Modern AutoCAD includes a full set of basic solid modelling and 3D tools, but lacks the advanced capabilities of solid modelling applications. AutoCAD can co-exist with such products as a 2D drafting tool.

Like other CAD programs, AutoCAD is a fundamentally a vector graphics drawing program. It uses primitive entities -- such as lines, polylines, circles, arcs, and text -- as the foundation for more complex objects.

AutoCAD supports a number of application programming interfaces (APIs) for customization and automation. These include AutoLISP, Visual LISP, and VBA. AutoCAD's license-based API, ARX', can be used; a C++ class library, which was also the base for products extending AutoCAD functionality to specific fields, to create products such as Autodesk Architectural Desktop, AutoCAD Electrical, or third-party AutoCAD based applications.

AutoCAD's native file format, AutoCAD DWG, and to a lesser extent, its interchange file format, DXF, have become de facto standards for interchange of 2D CAD data. In 2006, Autodesk estimated the number of active DWG files to be in excess of one billion. In the past, Autodesk has estimated the total number of DWG files in existence to be more than three billion.

AutoCAD currently runs exclusively on Microsoft desktop operating systems. Versions for Unix and Apple Macintosh were released in the 1980s, but these met with limited market acceptance and were later dropped. It usually suffers from poor performance when run in an emulator or compatibility layer like Virtual PC or Wine.

AutoCAD - AutoCAD LT

AutoCAD LT is a "scaled down" version of AutoCAD. "LT" does not stand for "light"; it originally stood for "lap top". (One pronounces the letters individually.) When AutoCAD LT was first introduced in 1993, laptop computers did not have the performance features they have today. A version of AutoCAD with a reduced feature set, and thus a smaller memory footprint, was needed for portable use. AutoCAD LT was the result.

Today, Autodesk sells AutoCAD LT for its much lower price. It is marketed as a CAD package for those who only need 2D functionality. Compared with AutoCAD proper, AutoCAD LT lacks several features, has almost no 3D capabilities, and does not include any programming interfaces.

AutoCAD - Overlay programs

Autodesk has also developed overlay programs, sometimes called Desktops, for discipline-specific enhancements. Architectural Desktop, for example, permits architectural designers to draw objects such as walls, doors and windows, with more intelligent data associated with them, rather than simple objects such as lines and circles. The data can be programmed to represent specific architectural products sold in the construction industry, or extracted into a data file for pricing, materials estimation, and other values related to the objects represented. Similarly, Civil Design, Civil Design 3D, and Civil Design Professional allow data-specific objects to be used, allowing standard civil engineering calculations to be made and represented easily.

AutoCAD is a CAD (Computer Aided Design or Computer Aided Drafting) software application for 2D and 3D design and drafting, developed and sold by Autodesk, Inc. Initially released in late 1982, AutoCAD was one of the first CAD programs to run on personal computers, and notably the IBM PC. Most CAD software at the time ran on graphics terminals connected to mainframe computers or mini-computers.

In earlier releases, AutoCAD used primitive entities — such as lines, polylines, circles, arcs, and text — as the foundation for more complex objects. Since the mid-1990s, AutoCAD has supported custom objects through its C++ API. Modern AutoCAD includes a full set of basic solid modeling and 3D tools. With the release of AutoCAD 2007 came improved 3D modeling functionality, which meant better navigation when working in 3D. Moreover, it became easier to edit 3D models. The mental ray engine was included in rendering, it was now possible to do quality renderings. AutoCAD 2010 introduced parametric functionality and mesh modeling.

AutoCAD supports a number of application programming interfaces (APIs) for customization and automation. These include AutoLISP, Visual LISP, VBA, .NET and ObjectARX. ObjectARX is a C++ class library, which was also the base for products extending AutoCAD functionality to specific fields, to create products such as AutoCAD Architecture, AutoCAD Electrical, AutoCAD Civil 3D, or third-party AutoCAD-based applications.

AutoCAD's native file format, DWG, and to a lesser extent, its interchange file format, DXF, have become de facto standards for CAD data interoperability. AutoCAD in recent years has included support for DWF, a format developed and promoted by Autodesk for publishing CAD data. In 2006, Autodesk estimated the number of active DWG files to be in excess of one billion. In the past, Autodesk has estimated the total number of DWG files in existence to be more than three billion.

AutoCAD currently runs exclusively on Microsoft Windows desktop operating systems. Versions for Unix and Mac OS were released in the 1980s and 1990s, but these were later dropped. AutoCAD can run on an emulator or compatibility layer like VMware Workstation or Wine, albeit subject to various performance issues that can often arise when working with 3D objects or large drawings.

AutoCAD and AutoCAD LT are available for German, French, Italian, Spanish, Japanese, Korean, Chinese Simplified (No LT), Chinese Traditional, Russian, Czech, Polish, Hungarian (No LT), Brazilian Portuguese (No LT), Danish, Dutch, Swedish, Finnish, Norwegian and Vietnamese. The extent of localization varies from full translation of the product to documentation only.

What is an AutoCAD Diploma Program?

AutoCAD is a computer aided design tool used in the drafting disciplines of fields such as architecture or engineering. An AutoCAD diploma program will train you for entry-level positions in CADD operations. A good program will offer a combination of mechanical and computer-aided drafting and design skills for application in various industries. With advanced AutoCAD skills you can find employment as a graphic artist, a 3D modeler, a production artist, a multimedia designer, an architectural or engineering drafts person, and more. A good training program involves a lot of hands-on practical skills. Some programs will provide you with a student version of the AutoCAD software, and focus on getting you up to speed on the latest version of the application, which has become the industry standard. Your hands-on training should include both a theory and lab component, and provide an environment in which you can become fully versed in the intricacies of CAD design. Ideally, the faculty teaching the courses should not only be CAD experts, but should also have industry experience and an understanding of how CAD applies in the field.

Skills Acquired

A good program in AutoCAD will prepare you with all the foundational knowledge you need to take up entry-level responsibilities as an AutoCAD operator, technician or draftsperson. You will learn the basic AutoCAD commands necessary to create drawings, edit and plot. You'll gain knowledge of fundamental concepts of creating two-dimensional drawings, and the skills for editing, dimensioning, viewing, and managing your work. In more advanced courses, you'll learn about 3D design techniques necessary to become a drafter, designer or engineer. You'll learn such vital skills as lock management; user coordinate systems; solids modeling; viewpoints, view ports and rendering; revolving, regions; attribute definitions; external referencing; techniques for special dimensioning; 2D isometrics; and extruding.