

Computerized Drafting (CAD) Courses

CAD1000 Computer-Aided Drafting I

This course presents students with the terminology, system hardware, disk operating system, AutoCAD software and various screen displays necessary to perform the basic computer-aided drafting functions.

Prerequisite(s): Corequisite: CAD1L00.

Offered at Providence
6 Quarter Credit Hours

CAD1020 Computer-Aided Drafting II

This is an intermediate-level course in which students produce drawings in the various phases architectural, electronic and mechanical CAD. These drawings are produced in two-dimensional views using features of the AutoCAD main menu. Students become familiar with accessing and using the drawing editor with advanced commands and an emphasis on productivity; an introduction to line and menu customization; 3-D wireframe/surface/solid modeling and analysis. Related lab projects are included.

Prerequisite(s): CAD1000, CAD1L00, Corequisite: CAD1L20.

Offered at Providence
6 Quarter Credit Hours

CAD1025 Parametric Modeling

This is an introductory course in which students use commands and techniques related to 3D modeling and analysis, and parametric drafting using parametric modeling software to create parts, assemblies and drawings to industry standards. Related lab projects are included where rapid prototyping methods such as laser cutting and 3D printing will be explored.

Offered at Providence, Providence CE

4.5 Quarter Credit Hours

CAD1030 3D Parametric Modeling

This is an advanced-level course in which students use commands and techniques related to 3-D modeling and analysis, and parametric drafting using several parametric modeling software packages to create parts, assemblies and drawings to industry standards. Related lab projects are included.

Prerequisite(s): Corequisite: CAD1L30.

Offered at Providence
6 Quarter Credit Hours

CAD1L00 Computer-Aided Drafting I Lab

In this course, students develop related lab projects from CAD1000 Computer-Aided Drafting I to enhance their ability to reinforce drafting concepts, software commands and file management.

Prerequisite(s): Corequisite: CAD1000.

Offered at Providence
1 Quarter Credit Hour

CAD1L20 Computer-Aided Drafting II Lab

In this course, students develop related lab projects from CAD1020 Computer-Aided Drafting II to enhance their ability to reinforce drafting concepts, software commands and file management.

Prerequisite(s): Corequisite: CAD1020.

Offered at Providence
1 Quarter Credit Hour

CAD1L30 3D Parametric Modeling Lab

In this course, students develop related lab projects from CAD1030 Computer-Aided Drafting III to enhance their ability to reinforce drafting concepts, software commands and file management.

Prerequisite(s): Corequisite: CAD1030.

Offered at Providence
1 Quarter Credit Hour

CAD2000 Portfolio Development

Students are required to prepare a portfolio containing a selection of their best drawings from each of the basic drafting principles. Each student presents his/her portfolio to the instructor for critique and grading.

Prerequisite(s): CAD2020, CAD2040.

Offered at Providence
1.5 Quarter Credit Hours

CAD2020 Mechanical CAD

This course develops standard industry practices used in CAD for mechanical applications. Basic drafting topics introduced, but not limited to, are multiview projection, dimension theory and GD&T, sections, auxiliary views, pictorial drawings, basic machine parts, cams, gears, threads and fasteners. Students develop drafting conventions through sequences and revisions. Related lab assignments are based on individual projects and team projects.

Prerequisite(s): CAD1030, CAD1L30.

Offered at Providence

4.5 Quarter Credit Hours

CAD2030 Design I: Principles of Design

This is an introduction to the fundamental elements of the design process, basic objectives of analysis, construction and evaluation solutions. Some topics developed include the design team, components of design theory, creativity, open-ended problem solving, alternative solutions and the positioning of design in the product development scheme.

Prerequisite(s): CAD1030, CAD1L30.

Offered at Providence

4.5 Quarter Credit Hours

CAD2040 Architectural CAD

This course develops standard industry practices used in CAD for architectural applications. Basic drafting topics introduced include, but are not limited to, residential, commercial, structural applications for floor plans, foundation plans, elevations, sections, details and pictorial drawings. The use of national, state and local code is integrated with theory. Related lab assignments are based on individual projects and team projects.

Prerequisite(s): CAD1020, CAD1L20, CAD2055.

Offered at Providence

4.5 Quarter Credit Hours

CAD2055 Introduction to Building Information Modeling

This course is an introduction to Building Information Modeling (BIM), which is an Architectural parametric application, from design concept to managing a completed facility. This course integrates theory and lab experiences using industry software to develop digital building models. Topics covered include but are not limited to, the history of BIM, developing building models, extracting documents and modifying building elements, presentation graphics and annotations, and integrating best practices of project management.

Prerequisite(s): Sophomore status.

Offered at Providence

4.5 Quarter Credit Hours

CAD2059 Introduction to Computer-Integrated Manufacturing (CIM)

This course presents students with the terminology and practical experience of following the development of a product through concept, design development, manufacturing and product distribution. Topics covered include but are not limited to, computer aided design, concurrent engineering, "just-in-time" manufacturing, materials and product management, and communication of ideas from sales representatives to production engineers.

Prerequisite(s): CAD1030, CAD1L30.

Offered at Providence

4.5 Quarter Credit Hours

CAD2061 CAD Applications

This course develops standard industry practices used in CAD for applications related to plumbing, electrical/electronic, HVAC, welding and sheet metal fabrication. The use of ANSI standards and building code applications are the basis for development of individual and team projects.

Prerequisite(s): CAD1030, CAD1L30, CAD2040.

Offered at Providence

4.5 Quarter Credit Hours

CAD2080 CAD for Network Systems Design

This course is an introduction to computer-aided design of logical and physical network layouts. The core of this course is basic networking documentation control and standardization as used in industry to develop a generic method of system and product development and revision procedures. Topics include, but are not limited to, standardization procedures within an organization, schematic and block diagrams of networks, bill of materials, revision of drawings, use of universal symbols, floor plans and blueprints and use of Internet sources to obtain information and send and receive electronic files.

Prerequisite(s): ITEC2081.

Offered at Providence, Providence CE

4.5 Quarter Credit Hours

CAD3015 Engineering Graphics & Design

This course is an introduction to computer-aided design drafting for 3D parametric applications, using related equipment and software. The core of this course is basic engineering documentation control and standardization as used in industry to develop a generic method of system and product development and revision procedures. After gaining basic skills with industry standard software, students will engage in a design project that explores typical physical layout and 3D design issues commonly faced by electronics engineers. Rapid prototyping methods (including laser cutting and 3d printing) will be explored.

Offered at Providence

4.5 Quarter Credit Hours

CAD3075 Design for Manufacturing

This course applies the design process and parametric modeling to product design solutions. Models are developed for specific manufacturing processes using concepts of manufacturing methods and tools. Concepts of machining and fabrication, computer numerical control machine technology (CNC), rapid prototyping and simulation modeling software are explored.

Prerequisite(s): CAD1030, CAD1L30, ENGN3020 or ENGN3130.

Offered at Providence

4.5 Quarter Credit Hours