

COMPUTER AIDED DESIGN AND DRAFTING (CAD)

Sylvania Campus
Science Technology Building (ST), Room 208
971-722-4163

www.pcc.edu/programs/drafting-design/

CAREER AND PROGRAM DESCRIPTION

Design drafters are skilled technicians who interpret engineering data to produce sketches, plans and detailed working drawings used in manufacturing and construction. Career opportunities exist for drafters in many areas including: product design, electronic schematic, sheet metal layout, structural steel detailing, special tools and fixtures and machine design. Graduates are found working for manufacturing firms, construction companies, engineering firms, city, state and federal agencies or they may be self-employed. Advancement to positions of designer, drafting supervisor, or engineering technician are possible.

DEGREES AND CERTIFICATES OFFERED

Less than One-Year Certificate

Computer Aided Design and Drafting (CAD)

PREREQUISITES AND REQUIREMENTS

Students new to the certificate program must take the college's placement examination for math prior to program advising and registration. Students must place in MTH 60 and WR 115 before registering for first term drafting classes. Consult a program advisor for information on PCC's policy for acceptance of courses taken at other colleges or high schools or the transferability of PCC courses to other institutions. This program is designed to assist students in acquiring the knowledge and skills required of drafters and designers. The program and courses are developed with the advice and support of an advisory committee.

Both day and evening courses are offered. Contact a program advisor for curriculum variations.

Students must receive a C or better in all required classes in order to receive a certificate in computer aided design and drafting. D or F grades and pass/no pass options are not acceptable grades for department required classes. Modern CAD (computer aided drafting) labs provide the opportunity for CAD skill development using a variety of CAD software.

Full time students typically begin the computer aided design and drafting certification program during the fall term, and follow in sequential order. Fundamental classes are repeated on a periodic basis, which provides the student with a variety of options in completing their certification in a timely manner.

COMPUTER AIDED DESIGN AND DRAFTING LESS THAN ONE-YEAR CERTIFICATE

Minimum 42 credit hours. Students must meet certificate requirements.

Computer Aided Design and Drafting Certificate Credit Summary

DRF	42
Credit Total	42

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term

DRF 100	Drafting Orientation	3
DRF 117	Drafting Fundamentals	4
DRF 126	Introduction to AutoCAD	3
DRF 136	Intermediate AutoCAD	3

Second Term

DRF 133	Intermediate Drafting	4
DRF 185	AutoCAD Inventor Fundamentals	3
DRF 246	AutoCAD 3-D: Solid Modeling	3
DRF 270	SolidWorks Fundamentals	3

Third Term

DRF 135	Advanced Drafting	4
DRF 251	Kinematics Drafting	3
DRF 256	Advanced AutoCAD	3
DRF 271	SolidWorks Advanced	3
DRF 285	AutoCAD Inventor Advanced	3

COURSE DESCRIPTIONS

DRF 100 Drafting Orientation 3.00 Designed to acquaint students with firms that employ drafters and designers. Students observe product lines and manufacturing operations through visual media or facility tours. Students become familiar with working conditions, and may converse with employees. Covers the fundamentals of technical report writing, memos, resume development, and internet research of technical products related to drafting and design. Audit available.

DRF 117 Drafting Fundamentals 4.00 Introduces skills needed to produce 2-D mechanical drawings, including orthographic projection, sections and pictorial drawings. Covers dimensioning basics and simple architectural plans and sections. Audit available.

DRF 126 Introduction to AutoCAD 3.00 Introduces AutoCAD software as a design tool. Instructions will be given in the operation of both hard disk and flexible disk data storage, and plotting. Covers creation, retrieval and modification of drawings that meet industry standards using basic AutoCAD commands. Audit available.

DRF 133 Intermediate Drafting 4.00 Reviews and incorporates material presented in DRF 117 and DRF 118. Introduces threads, fasteners, keys and springs, and their applications. Prerequisites: DRF 117, 126. Audit available.

DRF 135 Advanced Drafting 4.00 Introduces working drawings, including assemblies and details, weldments, drawing numbering systems and revisions. Covers dimensional tolerancing and fits, surface finishing and welding systems. Prerequisite: DRF 133. Audit available.

DRF 136 Intermediate AutoCAD 3.00 In-depth study of computer aided drafting using AutoCAD software. Covers slide files, block attributes, user coordinate systems, v-points, 3-D entity creation, external references, and paper/model space drawing manipulation. Prerequisite: DRF 126. Audit available.

DRF 185 AutoCAD Inventor - Fundamentals 3.00 Introduces AutoCAD Inventor as a feature-rich, parametric 3D design tool for assembly-centric modeling and collaborative engineering. Develops fundamental knowledge in the areas of part and assembly modeling, using adaptive features and parts, utilizing work groups, surfacing basics, managing data, and the Engineer's Notebook. Audit available.

DRF 237 Pro/Engineer Basics 3.00 Provides information on the Pro/Engineer Interface, command structure and solid modeling. Develops knowledge and skills in the creation and detailing of solid models. Audit available.

DRF 246 AutoCAD 3-D and Solid Modeling 3.00 Provides thorough coverage of 3-Dimensional drafting and design procedures. The concepts examined include 2D and 3D primitives, user coordinate systems, 3D v-points, complex extrusions, regions, shading and rendering, 3D solid models, and supportive AutoCAD 3D databases. Prerequisite: DRF 136. Audit available.

DRF 251 Kinematics Drafting 3.00 Introduces mechanisms that translate motion and force, including cams, gears, belts/pulleys and chains/sprockets. Introduces components such as pawls ratchets, linkages and levers. Includes drawings of stock (shelf) items and custom designs. Prerequisite: DRF 135, DRF 136 Audit available.

DRF 256 Advanced AutoCAD 3.00 Examines customization of AutoCAD menu and Lisp files. Includes buttons, POP, image, screen and tablet sections, creation and implementation of user-defined AutoLISP functions, and basic file management techniques. Prerequisite: DRF 136. Audit available.

DRF 270 SolidWorks Fundamentals 3.00 Introduces SolidWorks software as a 3-D design tool. Covers creation, retrieval and modification of 3-D and layout drawings using basic SolidWorks commands. Includes skills needed to create parametric models of parts and assemblies; generate dimensioned layouts; and Bill of Materials of those parts and assemblies. Audit available.

DRF 271 SolidWorks Advanced 3.00 Covers advanced editing and modeling options, configurations of assemblies, sheet metal, and top-down assembly modeling. Prerequisite: DRF 270. Audit available.

DRF 280 Cooperative Education: Drafting Student works on approved job sites and receives as varied and complete an experience as possible under job conditions. Prerequisite: Department approval required prior to registration. Audit available.

DRF 285 AutoCAD Inventor - Advanced 3.00 Covers advanced techniques used in creating and modifying parametric, assembly-centric 3D models with AutoCAD Inventor. Develops extensive knowledge in the areas of part and assembly modeling, adaptive features, utilizing work groups, surfacing, managing data and the Engineer's Notebook. Prerequisite: DRF 185; or department permission. Audit available.