Advising Guide:
Computer Aided Design and Design (CADD)

Sylvania Campus
Science Technology Building, Room 208
971.722.4163 or 971.722.4476

- Certificate in Computer Aided Design and Drafting - 42 credit hours of Computer Aided Design and Drafting courses for the 2011-12 calendar. Consult a program advisor for assistance in planning your program.

Career 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.

Program Requirements

Students new to the Computer Aided Design and Drafting certificate program must take the college's placement examinations prior to program advising and registration. It is advised that students place in MTH 60 and WR115 before registering for first term drafting classes, or have department approval.

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.

Course of Study – Certificate Program

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 advice and support of an advisory committee.

Full-time students begin the Computer Aided Design and Drafting Certificate program during the Fall term, and follow the class schedule in sequential order (please see class schedule on page 2). Both day and evening courses are offered. Full-time students attend school Monday through Thursday starting in the late afternoon or evening for the Fall, Winter and Spring terms.

Part-time students can start the program any term and the length of time it takes to complete the program depends on the number of classes a student takes and the sequencing. Generally it takes part-time students two years to complete the certificate program. Fundamental classes are repeated on a periodic basis, which provide the student with a variety of options in completing their certificate in a timely manner. Contact a program advisor for curriculum variations.

Students must receive a grade of "C" or better in all required classes in order to receive a degree 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, including AutoCAD, SolidWorks, and Inventor.

Certificate: Computer Aided Design and Drafting

First Term

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

Second Term

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

Third Term

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

- Recent high school graduates and transfer students with previous drafting course work should see a program advisor for advanced placement in the program.

Course Descriptions

DRF 100 Drafting Orientation 3 Cr. - Designed to acquaint students with firms that employ drafters and designers. Students observe product lines and manufacturing operations through visual media or facility tours. Covers the fundamentals of technical report writing, memos, resume development, and internet research of technical products related to drafting and design.

DRF 117 Drafting Fundamentals 4 Cr. - Introduces skills needed to produce 2D mechanical drawings, including orthographic projections, sections and pictorial drawings. Covers dimensioning basics and simple architectural plans and sections.

DRF 126 Introduction to AutoCAD 3 Cr. - 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.

DRF 133 Intermediate Drafting 4 Cr. - Reviews and incorporates material presented in DRF 117 and DRF 126. Introduces Geometric Construction, Dimensioning, Surface Finishing, and Fits and Limits of mating parts. Prerequisite: DRF 117, 126.

DRF 135 Advanced Drafting 4 Cr. - Reviews and incorporates material presented in DRF 117 and DRF 126. Introduces Threads and Fasteners, Springs, Working Drawings, and Documentation. Prerequisite: DRF 133.

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

DRF 185 AutoCAD Inventor Fundamentals 3 Cr. – 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. Prerequisite: DRF 136 or department permission.

DRF 246 AutoCAD 3-D and Solid Modeling 3 Cr. - Provides thorough coverage of 3D drafting and design procedures. 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.

DRF 256 Advanced AutoCAD 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.

DRF 251 Kinematics Drafting 3 Cr. - 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. Prerequisites: DRF 135, 136.

DRF 270 SolidWorks Fundamentals 3 Cr. - Introduces SolidWorks software as a 3D design tool. Covers creation, retrieval and modification of 3D 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.

DRF 271 SolidWorks Advanced 3 Cr. – Covers advanced editing and modeling options, configurations of assemblies, sheet metal, and top-down assembly modeling. Prerequisite: DRF 270.

DRF 280 Cooperative Education: Drafting 3 Cr. – 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. This course is optional for the Computer Aided Design and Drafting certificate.

DRF 285 AutoCAD Inventor Advanced 3 Cr. – 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.