Definition

Drafting is the drawing or designing of manufactured products, machines, structures, etc. Computer Aided Design (and Drafting) means using the computer and peripheral devices in producing the documentation needed in support of the design process.

Staff

To access faculty and staff, dial (661) 722-6300, then the 4-digit extension.

Program Advisement:
position vacant ext. 6402

Administrative Assistant:
Christi Crosby ext. 6370

Department Chair:
Kathy Osburn ext. 6898

Adjunct Faculty:
To access adjunct faculty voice mail, dial (661) 722-6300, then the 4-digit number.

	V.M.
Brent Kerns	2255
Victor Laxamana	2196
Michael Willett	2430

Program Description

The Drafting/Computer Aided Design program at Antelope Valley College offers mechanical, architectural, electronic, and aerospace drafting as it relates to industry and engineering transfer. This certificate program (which can be combined with the associate degree requirements to earn an associate degree) will prepare students for entry-level employment in industry.

Students must receive a minimum grade of "C" or better in all required core courses and the specific courses listed as program electives in order to qualify for the degree or certificate.

Distinctive Features

Many of the classes in the Drafting/Computer Aided Design program use the latest computers, laser printers, and color plotters; along with the current industry standard software, AutoCAD.

Career Options

Computer Aided Design Drafter

Program Learning Outcomes

Drafting/Computer Aided Design

1. Construct and edit 3-D models, in computer aided design program, from samples, sketches, or written descriptions.
2. Create multiple views, orientations, and reference frames for hand-drawn, 2-D or 3-D computer drawn models.
3. Recognize and utilize industry and military terminology, labels and symbols related to drafting.
4. Construct and edit electronics, wiring, circuit, and interconnection drawings in computer aided design program from preliminary sketches or descriptions.

Certificate Program

Drafting/Computer Aided Design

The following courses (20 units) are required for the certificate.

Required Courses:	**units**
ENGR 115, Basic Engineering Drawing	3
ENGR 120, Introduction to 2-D AutoCAD	3
DRFT 125, Mechanical Drafting **or** DRFT 230, Architectural Drafting II	3
DRFT 130, Architectural Drafting I	3
DRFT 150, Interm. 2-D AutoCAD	3
DRFT 240, Electronic Drafting	3
DRFT 250, Introduction to 3-D AutoCAD	2
	Total 20

For a recommended plan of study for the certificate, please refer to the Associate Degree plan minus the general education requirements.

Associate Degree

The requirements for an associate degree in Drafting/Computer Aided Design may be satisfied by completing the certificate program in addition to the associate degree requirements. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree in Drafting/Computer Aided Design will have drafting skills of value in the engineering technology fields including aerospace manufacturing, construction technology (including building codes), and industrial research and development. They will have entry level skills that would serve as a foundation for advancement in their field of employment. Moreover, the associate degree will also provide students with a broad range of knowledge with which: to evaluate and appreciate the physical environment, the culture, and the society in which they live; the ability to think critically; and the ability to communicate clearly and effectively.

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

Recommended Plan of Study

First Semester	**units**
ENGR 115, Basic Engineering Drawing	3
ENGR 120, Introduction to 2-D AutoCAD	3
Course from GE requirement Area D1	3
Electives	7
	Total 16

Second Semester	**units**
DRFT 130, Architectural Drafting I	3
DRFT 150, Interm. 2-D AutoCAD	3
DRFT 250, Introduction to 3-D AutoCAD	2
Course from GE requirement Area B	3
Course from GE requirement Area D2	3
	Total 14

Third Semester	**units**
DRFT 125, Mechanical Drafting **or** DRFT 230, Architect. Drafting II	3
DRFT 240, Electronic Drafting	3
Course from GE requirement Area A	3
Course from GE requirement Area E	3
Course from GE requirement Area F	3
	Total 15

Fourth Semester	**units**
Course from GE requirement Area C	3
Electives	12
	Total 15

Degree Total 60

NOTE: Semester order for courses and time to complete may vary for night students.

Transfer

Not a transfer major.

Prerequisite Completion

If a course is listed as a prerequisite for another course, that prerequisite course must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk **(*)** before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

Drafting / CAD Courses

DRFT 125 MECHANICAL DRAFTING

3 units
6 hours weekly
Prerequisite: *Completion of ENGR 120.*
A second level course in mechanical engineering drafting following ENGR 115. Topics include: fasteners, successive auxiliary views, pictorial drawings (including shaded and exploded views), development, surface intersections, geometric tolerance, and working drawings. Work to be performed in AutoCAD. (CSU, AVC)

DRFT 130 *ARCHITECTURAL DRAFTING I

3 units
6 hours weekly
Prerequisite: *Completion of ENGR 120.*
Advisory: *Eligibility for ENGL 097, READ 095 and MATH 070.*
Techniques of basic architectural drawing practices and engineering principles, construction methods, materials, building ordinances, and the preparation of working drawings for one-story wood frame residential construction according to conventional practice. Emphasis on problems involving planning, design presentations and a complete set of drawings for residential frame construction. Work to be performed in AutoCAD. (AVC)

DRFT 150 *INTERMEDIATE 2-D AUTOCAD

3 units
6 hours weekly
Prerequisite: *Completion of ENGR 120.*
Advisory: *Eligibility for READ 099.*
This is an intermediate course in design/drafting covering orthographic projection. Topics include dimensioning, tolerancing, section views, auxiliary views, blocks, Xrefs, attributes, bill of materials, isometric drawings, 3D modeling, and script files. Work to be performed in AutoCAD. (CSU, AVC)

DRFT 230 *ARCHITECTURAL DRAFTING II

3 units
6 hours weekly
Prerequisite: *Completion of DRFT 130.*
Advisory: *Eligibility for ENGL 097 and READ 095.*
Techniques in architectural drafting are covered including the development of a complete set of plans for a two-story residential dwelling. Local and state codes, ASA and graphics standards are also included. Work to be performed in AutoCAD. (AVC)

DRFT 240 *ELECTRONIC DRAFTING

3 units
6 hours weekly
Prerequisite: *Completion of ENGR 120.*
Advisory: *Eligibility for ENGL 099, READ 099 and MATH 070.*
A drafting course intended particularly for electronic students. Topics include: lettering (freehand and with templates), use of instruments and special templates, orthographic projection, dimensioning, pictorial drawing, schematic wiring diagrams, connection drawings, printed circuit boards, electronic symbols, industrial standards, component and assembly drawings, and microelectronic drawings. Work to be performed in AutoCAD. (AVC)

DRFT 250 *INTRODUCTION TO 3-D CAD DRAFTING

2 units
4.5 hours weekly
Prerequisite: *Completion of ENGR 120.*
An advanced course in Computer Aided Design and Drafting using AutoCAD and/or SolidWorks software. Topics include: Creation and editing of 3-D models using rendering, wireframes and solid elements and the subsequent creation of 2-D orthographic, auxiliary, and section views derived from 3-D models. (CSU, AVC)

ENGR 115 *BASIC ENGINEERING DRAWING

3 units
6 hours weekly
Advisory: *Eligibility for MATH 070.*
Introductory engineering drawing covers lettering, use of instruments and rulers, applied geometry, sketching, sectional views, orthographic projection and auxiliary views. Computerized software will be introduced. This course is intended for vocational training leading to a certificate and a basic drawing background for engineers transferring to a university. (CSU, AVC)

ENGR 120 *INTRODUCTION TO 2-D CAD

3 units
6 hours weekly
Advisory: *Eligibility for READ 099.*
Introduction to the study of 2-dimensional (2D) computer aided design (CAD) and drafting using engineering design software. Includes lectures, demonstrations, and laboratory practice. Student will gain experience in the preparation of industry quality drawings as a result of the training. Previous skills in computer operation are not required. Work is to be performed by the students using engineering design/CAD software.(CSU, AVC)