

DRAFTING TECHNOLOGY AND ENGINEERING

SCHOOL OF MATHEMATICS, COMPUTER SCIENCE AND ENGINEERING

Interim Dean: William L. Kelly

Academic Chair: Mas Hayashi

Faculty: Dwight Collins

CURRICULUM

Students majoring in drafting technology prepare to enter several areas of the technology, including mechanical, electrical and aeronautical/aerospace technology, and their various research and development fields. The curriculum emphasizes the universal language used in industrial, technical, and engineering applications. Students develop the skills needed to produce and interpret technical drawings, using traditional as well as multi-axis computer-based graphics generation. Laboratory experiences include working on many different types of drafting problems designed to refine the students' abilities to interpret, analyze and transmit facts graphically. Courses in the major and recommended electives stress the development of basic skills in mathematics, communication, and the sciences.

MAJOR

The program is designed to prepare students for employment within the broad spectrum of the drafting and design field. Various options are available to meet both short- and long-range educational goals. Students may select the technically specific certificate program or the broad-based Associate in Science degree in Drafting Technology or the Computer-Aided Drafting Design (CAD) emphasis. By completing the associate degree, the student ensures a high level of competency within the technology as well as developing a strong, broad-based foundation in preparation for future upgrade. Individual and sequenced courses are designed for those who are currently employed and wish to upgrade or specialize in a specific subject area.

DEGREE OPTIONS

- **Associate in Science Degree in Drafting Technology**
Computer-Aided Design Emphasis (Mechanical Option)

Students must complete a minimum of 60 units of credit, including the courses in the major ("Major Requirements") and general education requirements (pages 56-61), with an overall GPA of 2.0 or better. A minimum of 12 units must be completed at Irvine Valley College. See pages 52-54 for further information.

CERTIFICATE OPTIONS

- **Certificate of Achievement in Drafting Technology**
Computer-Aided Design Emphasis (Mechanical Option)

Students must complete all courses in the certificate program ("Major Requirements") with a grade of "C" or better. A minimum of 12 units in the certificate program must be completed at Irvine Valley College. See page 55 for further information.

TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree at Irvine Valley College may not be the same as those required for completing the major at a transfer institution offering a baccalaureate degree. Students who plan to transfer to a four-year college or university should (1) refer to the University Studies major (page 182) and "Transfer Planning" (page 63); (2) consult the catalog of their prospective transfer institution (see the IVC Transfer Center for assistance); and (3) schedule an appointment with an IVC counselor to develop a plan of study before beginning their program. It may be helpful to meet with the department faculty at IVC.

MAJOR REQUIREMENTS: DRAFTING TECHNOLOGY

ASSOCIATE IN SCIENCE DEGREE OR CERTIFICATE OF ACHIEVEMENT

Complete the following courses:		Units
DR 50	Introduction to Computer-Aided Drafting	3
DR 100	Fundamentals of Mechanical Drafting	3
DR 101	Mechanical Drafting	3
ENGR 21	Introduction to Engineering and Technology	1
ENGR 23	Engineering Graphics and Descriptive Geometry	3
ENGR 183	Computer-Aided Design Techniques	3
MATH 124	Trigonometry	3
MATH 253	Intermediate Algebra	5
TOTAL UNITS:		24

COMPUTER-AIDED DESIGN EMPHASIS (MECHANICAL OPTION)

Complete the following courses:		Units
CIM 100A	Computer Keyboarding and Document Processing I	2
DR 50	Introduction to Computer-Aided Drafting	3
DR 100	Fundamentals of Mechanical Drafting	3
DR 101	Mechanical Drafting	3
DR 102	Mechanical Drafting and Design	3
ENGR 21	Introduction to Engineering and Technology	1
ENGR 23	Engineering Graphics and Descriptive Geometry	3
ENGR 183	Computer-Aided Design Techniques	3
ENGR 184	Advanced Computer-Aided Design	3
ENGT 140	Manufacturing Processes	3
MATH 124	Trigonometry	3
TOTAL UNITS:		30

Recommended Electives: ET 101, PHYS 2A, SP 1, WR 1.

COURSES

DRAFTING

DR 50: Introduction to Computer-Aided Drafting

3 Units

2 hours lecture, 4 hours lab

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This is an introductory course teaching the operation and application of a computer-aided drafting (CAD) system that is used to create, modify, store, and plot mechanical, architectural, and electronic drawings. Drafting 50 was formerly Drafting 150. R-E-3

DR 100: Fundamentals of Mechanical Drafting

3 Units

2 hours lecture, 4 hours lab

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This course develops basic drafting skills, including the proper use of drafting instruments, lettering, geometric construction, multiview projection, selections and conventions, pictorial drawings, single auxiliary views, and dimensioning. NR

DR 101: Mechanical Drafting

3 Units

2 hours lecture, 4 hours lab

Prerequisite: Dr. 100

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This course develops the basic skills required to produce industrial quality assembly and detail drawings, including first and second auxiliary views, shop practices, and tolerancing. Students further develop their fundamental mechanical drawing skills. NR

DR 102: Mechanical Drafting and Design

3 Units

2 hours lecture, 4 hours lab

Prerequisite: Dr. 101

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

In this course students develop the basic skills needed for industrial-level mechanical drawing and conceptual design, including assembly drawings and detail drawings. They study the fundamentals of mechanical design and strategies for creative design. NR

ENGINEERING (GENERAL)

ENGR 21: Introduction to Engineering and Technology

1 Unit

1 hour lecture

This course is a survey of the fields of engineering and related occupations. It is designed to familiarize students with the educational requirements and opportunities for employment as a scientist, engineer, or technician, as well as the nature and responsibilities of such work. NR

ENGR 23: Engineering Graphics and Descriptive Geometry

3 Units

1.5 hours lecture, 4.5 hours lab

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

In this course students will learn the principles of graphical expression through sketching, orthographic projection, auxiliary views, dimensions, and working drawings. They will learn and practice the descriptive geometry methods of points, lines, planes, warped surfaces, intersections and developments. NR

ENGR 183: Computer-Aided Design Techniques

3 Units

1.5 hours lecture, 4.5 hours lab

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This is an advanced course providing instruction in the latest techniques available in computer-aided design. The course focuses on the use of the computer as a tool in all phases of the design process. Students will work with computer-aided design systems, using computer graphics to solve a variety of design problems. NR

ENGR 184: Advanced Computer-Aided Design

3 Units

1.5 hours lecture, 4.5 hours lab

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This advanced course uses a high-function CAD/CAM system which offers design and manufacturing engineers a tool for 2-D and 3-D graphic applications. The course is intended to explore higher functions of CAD/CAM modeling systems using advanced curves and surfaces. NR

ENGINEERING TECHNOLOGY

ENGT 140: Manufacturing Processes—Systems Introduction

3 Units

3 hours lecture

Recommended Preparation: Concurrent enrollment in CIS 205L strongly recommended

This is an introductory course in manufacturing technology concepts, functions, and techniques. The course provides exposure to manufacturing activities, computer-aided design (CAD), computer-aided manufacturing (CAM), manufacturing systems and plant layout, materials handling, process control cost and value, quality control, production control, and the solution of manufacturing technology problems. NR