

IVC

IRVINE VALLEY COLLEGE

CAREER TECHNICAL EDUCATION & WORKFORCE DEVELOPMENT
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www.ivc.edu/careered • 949/451-5224

PROGRAM GUIDE

Drafting Technology & Engineering (DR & ENGR) Certificate

- **Drafting Technology – 24 units**

Description: Students majoring in drafting technology prepare to enter several areas of 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 basic and advanced drafting and design problems designed to refine the students' abilities to interpret, analyze and transmit specifications graphically. Courses in the major and recommended electives stress the development of basic skills in mathematics, communication, and the sciences.

Prerequisites/Preparation: The math courses required for the certificates carry prerequisites to meet prior to enrollment. Math 253 (Intermediate Algebra) has a prerequisite of Elementary Algebra which can be met by passing Math 251 with a "C" or better or by placing in Math 253 by an assessment exam. Math 124 (Trigonometry) has a prerequisite of Math 253 which can be met by passing the class with a "C" or better or by placing in Math 124 by an assessment exam.

Preparation for Career Related Exams/Certification: The American Design Drafting Association (ADDA) has established a certification program for drafters. Although employers usually do not require drafters to be certified, certification demonstrates knowledge of and an understanding of nationally recognized practices. Individuals who wish to become certified must pass the Drafter Certification Test, administered periodically at ADDA-authorized sites. Applicants are tested on basic drafting concepts, such as geometric construction, working drawings, and architectural terms and standards.

Associate of Science Degree: A student may earn an A.S. degree in Drafting Technology from IVC if, in addition to certificate requirements, he/she also meets general education requirements posted in the IVC catalog, class schedule, and www.ivc.edu. See a counselor for more information.

***Four Year Institutions Offering Degrees/Programs in This Field:**

California State Polytechnic University, Pomona – Bachelor of Science in Mechanical Engineering

California State University, Fullerton – Bachelor of Science in Mechanical Engineering, Manufacturing Engineering emphasis

See www.ivc.edu/careered or call 949/451-5224 for additional program information and updates

University of California, Irvine – Bachelor of Science in Mechanical Engineering,
Materials Science specialization and in Aerospace Engineering
California State University, Chico – Bachelor of Science in Mechatronic Engineering
University of Southern California – Bachelor of Science in Mechanical Engineering and in
Aerospace Engineering

*See counselor or transfer center for specific transfer requirements

Scholarships/Financial Aid: Students may contact the IVC Financial Aid office for more information and additional opportunities.

Work Experience/Internships: Students are encouraged to visit the Job Placement office for information on employment opportunities in the field.

Career Options: Examples of industry segments hiring drafters include the following:

- Automotive design and manufacturing
- Biomedical and healthcare manufacturing
- Computer product manufacturing
- Construction
- Environmental design
- Machinery manufacturing
- Metal manufacturing
- Military and aerospace
- Professional and scientific technical services
- Robotics and automation
- Telecommunications
- Utilities and local government

Job Description: *Computer-aided drafters* translate the ideas and rough sketches of professional engineers and architects into detailed drawings and specifications utilizing industry-specific 2D and 3D computer software. These drawings enable other workers to build or manufacture the product according to the designer's concept. Drafters are usually involved in the initial phases of new projects and play a major role throughout their development.

Employment Opportunities: Although growth is expected to be greatest for mechanical, architectural, and civil drafters, demand for particular drafting specialties varies throughout the country because employment usually is contingent on the needs of local industry. Opportunities should be best for individuals with at least 2 years of postsecondary training in a drafting program that provides strong technical skills and considerable experience with CADD systems. CADD has increased the complexity of drafting applications while enhancing the productivity of drafters. It also has enhanced the nature of drafting by creating more possibilities for design and drafting. As technology continues to advance, employers will look for drafters with a strong background in fundamental drafting principles, a high level of technical sophistication, and the ability to apply their knowledge to a broader range of responsibilities.

Occupational Outlook for Orange County, CA: It is predicted that between 2002 and 2014, employment in the field of Mechanical Drafting will increase 17.1%, Architectural and Civil Drafting will increase 15.3%, Mechanical Engineering Technicians will see an increase of 21.9%, and Industrial Engineering Technicians will enjoy a 21.5% increase in employment in Orange County. (Source: Bureau of Labor Statistics, www.bls.gov/oco)

Salary Range/Median for Orange County, CA:

Mechanical Drafters	\$24.31 hourly	\$50,578 annually
Architectural & Civil Drafters	\$24.32 hourly	\$50,588 annually
Mechanical Engineering Technicians	\$23.35 hourly	\$49,845 annually
Industrial Engineering Technicians	\$28.17 hourly	\$58,600 annually

(Source: California Occupational Guides, www.labormarketinfo.edd.ca.gov/occguides)

Job Related Skills in Coursework: The IVC classroom laboratory consists of 25 fiber-networked workstations. CAD, CAM, and modeling/animation software, both 2D and 3D, is selected from applications most used throughout industry which includes AutoCAD and SolidWorks. Students receive instruction and view demonstrations via a ClassNet connection, enabling the instructor to provide individual help expediently. Students will find learning in this classroom environment to be highly efficient and time effective.

Personal Traits Desired for This Field:

- Possess an above-average ability to visualize spatial relationships of plane and solid objects, and to notice detail
- Can create precise drawings according to set standards
- Able to make numerical calculations to check work for accuracy
- Self-motivated and willing to work with others in a team effort
- Enjoy applying artistic and creative abilities to projects

Professional Organizations/Websites/Publications in Field:

American Design Drafting Association: www.adda.org
-offers a student membership
-offers drafting certification

Society of Mechanical Engineers: www.asme.org
-offers a student membership
-lists internship opportunities
-on-line career center

CLUB ON CAMPUS:

The Young Engineers Club
Website: <http://www.ivc.edu/engineersclub>
E-Mail: young.engineers.club@gmail.com
Club Advisor: Ilknur Erbas-White

IVC Contacts:

Drafting & Engineering Technology Certificates - Program Questions:

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Certificates - General Questions:

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