DRAFTING/CAD

Program Description
The 21st century is witnessing a rapid growth in science, engineering and technology. This will require society to read, write and draw the language of technology—drafting.

Drafting is used in a wide variety of business, industrial, professional and governmental activities, including the following:

- Anthropology
- Archeology
- Architecture
- Art—Design
- Automotive Services
- Computer Drafting
- Computer Science
- Electronics
- Engineering
- Environmental Studies
- Geology/Geography
- Graphics—Design
- Industrial Technology
- Interior Design
- Landscape Architecture
- Landscape Horticulture
- Machine Shop/Welding
- Mapping
- Marine Diving Technology
- Mathematics—Applied
- Mechanical/Elect. Systems
- Physics—Applied
- Surveying
- Technical Illustration

Santa Barbara City College’s Drafting/CAD Department offers comprehensive training for entry-level positions. California certificated and professionally experienced instructors teach all departmental courses, with heavy emphasis on the laboratory use of modern drafting equipment.

Full college credit is granted for each course successfully completed. Students who complete the 31.0 units of required Drafting/CAD courses and the controlled electives earn a Certificate of Achievement in Drafting/CAD. Those who also complete institutional and General Education course requirements earn the Associate in Science Degree in Drafting/CAD. The department offers all courses with an open-door policy—both for majors and non-majors.

Planning a Program of Study
Students are advised to see a college counselor and the Department Chairperson in planning a program of study. Many factors need to be considered in the plan, including:

1. Academic goals, i.e., bachelor’s degree, associate degree, or certificate programs.
2. Career and occupational goals, i.e., professional, paraprofessional, technical, occupational, or trade.
3. Program majors, such as Architecture, Engineering, Computer Science, Graphic Design, Electronic/Computer Technology and others.
4. The Drafting/CAD Department advises the student to make the choice between pursuing Architectural Drafting or Mechanical Drafting early in his/her education.

Note: Students who have completed the Certificate of Completion requirements can continue on to the Associate in Science Degree by satisfying General Education and SBCC requirements for the AS Degree.

Honors and Awards
The Drafting/CAD Department selects one student each year as “Outstanding Student.” Selections are made by the department faculty and are based on academic achievement and service to the college.

Tutorial Opportunities
Each semester, the Drafting/CAD Department is allocated funds to hire student tutors. Students who have performed well in a course and who demonstrate interest in teaching are selected by the department to tutor students currently enrolled in courses. The purpose of this program is two-fold. Students currently taking courses receive excellent peer tutoring and tutors learn the techniques of teaching. Tutors also find that to teach is to learn.

Special Department Resources
A wide range of resources is available to all students enrolled in the Drafting/CAD Program. Students have access to exceptionally well-equipped laboratories with modern drafting furniture, computers, machines and supplies. Blueprinting facilities are available. Light tables and special mapping tables are available in the Drafting laboratory. A CAD (Computer-Assisted Drafting) laboratory is the department’s latest modern facility addition.

The department sponsors several events, programs and services to help the student become better acquainted with the professional world of drafting. These include seminars, guest lectures, films, internships and work experience liaison with area employers.

Advising
In addition to the college counselor for the Drafting/CAD Department and the Career Center, the Department Chairperson advises students who are planning academic, professional or occupational programs and investigating career goals. Contact, Armando M. Arias del Cid, OE-24, (805) 730-4236.

Program Cost and Outcome
For planning purposes, the website below provides information on the cost of attendance, program length (assuming a student attends full-time), financing options and historical student completion rates: http://www.sbcc.edu/financialaid/gainfulemployment

Programs of Study
- Drafting/CAD, Associate in Science (AS) (https://catalog.sbcc.edu/academic-departments/drafting-cad/drafting-cad-as)
• Drafting/CAD, Certificate of Achievement (C) (https://catalog.sbcc.edu/academic-departments/drafting-cad/drafting-cad-certificate-achievement)

**Credit Courses**

**Drafting/CAD (DRFT)**

**DRFT 101 Basic Drafting (3 Units)**
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Fundamental concepts of technical drafting. Topics include: drafting standards and conventions; multi-view orthographic projections; non-perspective Pictorial views; planning, elevation and section views; manual and computer aided drafting tools and annotations. Emphasis placed on architectural and engineering technical drafting.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 120 Architectural Drafting I (3 Units)**
Skills Advisories: MATH 1 and eligibility for ENG 103 Fundamental Concepts in architectural drafting.
Hours: 72 (45 lecture, 27 lab)
F, S - CU, UC Topics will include architectural drafting standards and conventions, multi-view orthographic projections, floor plan, elevation and section views, manual and computer aided drafting tools, output and delivery methods.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 121 Architectural Drafting II (3 Units)**
Corequisites: DRFT 120.
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Topics include drafting standards, conventions, CAD standards, MasterFormat, and construction documents. Emphasis in project deliverables includes cover sheet, site plan, floor plans, roof plan, elevations, sections, wall sections, schedules, interior elevations, details, manual and computer aided drafting tools, and output/delivery methods.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 124 Architectural Rendering I (3 Units)**
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Fundamentals of architectural rendering using manual and computer-aided drafting tools, including interior and exterior one/two-point perspectives, oblique, and isometric drawings. Rendering techniques include surfaces, textures, shades, shadows, figures and foliage. Emphasis on compiling a portfolio of architectural presentation drawings.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 125 Architectural Rendering II (3 Units)**
Prerequisites: DRFT 124.
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Advanced architectural rendering using manual and computer-aided drafting tools, including presentation drawings, two-point perspectives, oblique and isometric drawings. Rendering techniques include surfaces and textures, shades and shadow, figures and foliage. Emphasis on compiling a portfolio of architectural presentation drawings.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 126 Landscape Drafting I (3 Units)**
Same as: EH 126
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Principles of drafting and plan reading for landscape architecture and ornamental horticulture. Style research, drafting of plans, elevations and details.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 127 Landscape Drafting II (3 Units)**
Same as: EH 127
Prerequisites: EH 126 or DRFT 126.
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 72 (45 lecture, 27 lab)
Advanced drafting and plan reading using manual and computer drafting tools, for landscape architecture and ornamental horticulture fields. Includes site plans, elevations and details.
Transfer Information: CSU Transferable, UC Transferable

**DRFT 129 Principles Of Residential Construction (3 Units)**
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 54 (54 lecture)
Overview of residential construction for homeowners, remodelers, drafters and designers. Topics include building codes, materials, grading, foundations, framing, mechanical systems, doors and windows, roofing and drywalling.
Transfer Information: CSU Transferable

**DRFT 130 Computer-Assisted Drafting And Design I (5 Units)**
Prerequisites: DRFT 101 or DRFT 120 or DRFT 126.
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 126 (72 lecture, 54 lab)
Intermediate AutoCAD. Set Up, drafting, editing, output, and delivery. Coverage of latest AutoCAD features.
Transfer Information: CSU Transferable, UC Transferable
UC Transfer Limit: DRFT 130/ENGR 130, DRFT 131/ENGR 131 and DRFT 132/ENGR 132 combined: maximum credit, one course.

**DRFT 131 Computer-Assisted Drafting And Design II (5 Units)**
Prerequisites: DRFT 130.
Skills Advisories: MATH 1 and eligibility for ENG 103.
Hours: 126 (72 lecture, 54 lab)
Advanced AutoCAD. File Management and CAD Standards for Project Driven Productivity, 3D Modeling.
Transfer Information: CSU Transferable, UC Transferable
UC Transfer Limit: DRFT 130, 131, and 132 combined: maximum credit, one course.

**DRFT 132 CAD Drafting/Design III (5 Units)**
Course Advisories: DRFT 129.
Skills Advisories: Eligibility for English 103 and Math 1.
Hours: 126 (72 lecture, 54 lab)
Introduction to Autodesk Revit©. Designed to meet the needs of students who want to learn the basics of industry-standard building information modeling software.
Transfer Information: CSU Transferable, UC Transferable
UC Transfer Limit: DRFT 130, 131, and 132 combined: maximum credit, one course.
DRFT 142  Product Design Fundamentals (3 Units)
Skills Advisories: Eligibility for ENG 103 and MATH 1.
Hours: 72 (45 lecture, 27 lab)
In this product design studio, students are introduced to the process of product design and develop the skills necessary for bringing design ideas to fruition. We will explore product design practice as the intersection of creativity, critical thinking, and practical application in commerce, and learn to approach designed objects as challenges to meet human needs.
Transfer Information: CSU Transferable

DRFT 143  Product Design and Rapid Prototyping Workshop (3 Units)
Prerequisites: DRFT 142.
Skills Advisories: Eligibility for ENG 103 and proficiency in MATH 1.
Hours: 72 (45 lecture, 27 lab)
Students turn their design concepts into physical objects through hands-on experience in the complete cycles of product design applied to small scale additive manufacturing. Tailored to expose students to selected software used for product design and visualization, with emphasis on 3D modeling applications with capabilities, features, and support for rapid prototyping with 3D printers.
Transfer Information: CSU Transferable

DRFT 146  3D Printing Fundamentals (3 Units)
Skills Advisories: Eligibility for ENG 103 and proficiency in MATH 1.
Hours: 72 (45 lecture, 27 lab)
Fundamentals of 3D Printing. Topics include history of 3D printing, the present state of rapid prototyping, the future of rapid prototyping, best practices, materials for additive manufacturing, and the business side of additive manufacturing. Identifying sources for 3D printing.
Operation, servicing and maintenance of 3D printers. Legal aspects and ramifications of rapid prototyping.
Transfer Information: CSU Transferable

DRFT 148  3D Modeling with Solid Works (3 Units)
Skills Advisories: Eligibility for ENG 103 and proficiency in MATH 1.
Hours: 72 (45 lecture, 27 lab)
3D modeling with Solid Works and ProE.
Transfer Information: CSU Transferable

DRFT 150  Intro to Landscape Architecture (3 Units)
Hours: 72 (45 lecture, 27 lab)
Introduces students to the nature and practice of Landscape Architecture. Core elements of the course examine the history, theories, design principles, ecology, and the latest professional and educational developments in the field of Landscape Architecture.
Transfer Information: CSU Transferable, UC Transferable

DRFT 151  Landscape Architecture Design Studio I (5 Units)
Corequisites: DRFT 150.
Hours: 126 (72 lecture, 54 lab)
Prerequisites or This course explores design principles, materials, and issues relevant to landscape architecture. Emphasizing the design process, topics include; site analysis, design synthesis, and methods to communicate intended concepts and ideas. Builds on the principles and techniques covered in Intro to Landscape Architecture.
Transfer Information: CSU Transferable

DRFT 152  Landscape Architecture Design Studio II (5 Units)
Corequisites: DRFT 151.
Hours: 126 (72 lecture, 54 lab)
Prerequisite or Development of design principles and processes of landscape architecture through complex design projects. The course examines large-scale landscape planning & urban design projects and approaches towards balancing ecological health and public needs. Emphasis on program development, site suitability, and design for human behavior & comfort. Explores sustainable practices across environmental, sociocultural, and economic realms.
Transfer Information: CSU Transferable

DRFT 290  Work Experience In Drafting (1-4 Units)
Limitations on Enrollment: (1) Employed or available for employment in an occupation directly related to the Drafting major; and, (2) Must be enrolled in no less than seven (7) units, including Work Experience.
Skills Advisories: Eligibility for ENG 103 and proficiency in MATH 1 or MATH 41.
Hours: 300 (300 lab)
(1) Available for employment in an occupation related to Drafting; (2) Must be enrolled in no less than seven (7) units. May be taken for 1, 2, 3 or 4 units of credit. Maximum (4) units per semester for a maximum of (16) units. Course restricted to 3 repetitions
Transfer Information: CSU Transferable

DRFT 299  Independent Study In Drafting (1-4 Units)
Limitations on Enrollment: Completion of a minimum of 12 units at SBCC, with a 2.5 G.P.A., and a minimum of 6 (six) units completed in Drafting.
Skills Advisories: Eligibility for ENG 103 and proficiency in MATH 1 or MATH 41.
Hours: 192 (192 lab)
Provides students with an opportunity to engage in Independent study in drafting. Students work under direction of sponsoring faculty member on a project directly related to drafting. Course restricted to 3 repetitions
Transfer Information: CSU Transferable