



Computer Aided Drafting and Manufacturing (TOP: 0956.00)

May 2019

Prepared by the South Central Coast Center of Excellence for Labor
Market Research

Program Recommendation

This report was compiled by the South Central Coast¹ Center of Excellence to provide regional labor market data for the program recommendation – Computer Aided Drafting and Manufacturing. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

Key Findings

- In the South Central Coast region, the number jobs related to Computer Aided Drafting and Manufacturing is expected to remain steady over the next five years. Limited growth is projected.
- All associated occupations anticipate a low risk of automation.
- In 2017 there were 98 regional completions in programs related to the occupations identified as related to Computer Aided Drafting and Manufacturing and 162 openings. This demonstrates an undersupply in this area.
- Typical entry-level education is an Associate's degree for Architectural and Civil Drafters, Mechanical Drafters, and Manufacturing Engineering Technologists.
- Completers of regional Computer Aided Drafting and Manufacturing programs (TOP 0956.00) from the 2015-2016 academic year had a median annual wage upon completion of \$30,137.
- 60% of students are earning a living.
- 69% of students are employed within a year after completing a program.

¹ The South Central Coast Region consists of San Luis Obispo County, Santa Barbara County, Ventura County, and the following cities from North Los Angeles County: Canyon Country, Castaic, Lake Hughes, Lancaster, Littlerock, Llano, Newhall, Palmdale, Pearblossom, Santa Clarita, Stevenson Ranch, and Valencia.

Occupation Codes and Descriptions

Currently, there are three occupations in the standard occupational classification (SOC) system that are related to Computer Aided Drafting and Manufacturing. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

Exhibit 1 – Occupation, description, and sample job titles

SOC Code	Title	Description	Sample of Reported Job Titles
17-3011	Architectural and Civil Drafters	Prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Use knowledge of building materials, engineering practices, and mathematics to complete drawings.	Architect, Architectural Designer, Architectural Drafter, Architectural Draftsman, Architectural Intern, CAD Technician (Computer-Aided Design Technician), Drafter, Draftsman, Intern Architect, Project Manager
17-3013	Mechanical Drafters	Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.	CAD Designer (Computer Aided Design Designer), CAD Operator (Computer Aided Design Operator), Design Drafter, Designer, Drafter, Drafting Technician, Mechanical Designer, Mechanical Drafter, Product Designer, Project Designer
17-3029	Engineering Technicians, Except Drafters, All Other (17-3029.06, Manufacturing Engineering Technologists)	All engineering technicians, except drafters, not listed separately.	Business Process Analyst, Manufacturing Coordinator, Manufacturing Technology Analyst, Product Manager, Scientist

Source: O*NET Online

Current and Future Employment

In the South Central Coast region, the number of jobs related to Computer Aided Drafting and Manufacturing is expected to remain steady over the next five years. Exhibit 2 contains detailed employment projection data for these occupations.

Exhibit 2 – Five-year projections for Computer Aided Drafting and Manufacturing in the South Central Coast region

SOC	Occupation	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change
17-3011	Architectural and Civil Drafters	629	658	29	5%
17-3013	Mechanical Drafters	249	262	13	5%
17-3029	Engineering Technicians, Except Drafters, All Other (17-3028.06, Manufacturing Engineering Technologists)	667	664	-3	0%

Source: Economic Modeling Specialists International (EMSI)

Earnings

In the South Central Coast region, the average wage for the listed occupations is \$31.47 per hour.

Exhibit 3 contains hourly wages and annual average earnings for these occupation. Entry-level hourly earnings are represented by the 25th percentile of wages, median hourly earnings are represented by the 50th percentile of wages, and experienced hourly earnings are represented by the 75th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for Computer Aided Drafting and Manufacturing in the South Central Coast region

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
17-3011	Architectural and Civil Drafters	\$20.68	\$25.98	\$31.56
17-3013	Mechanical Drafters	\$24.13	\$32.05	\$46.23
17-3029	Engineering Technicians, Except Drafters, All Other (17-3028.06, Manufacturing Engineering Technologists)	\$30.36	\$37.20	\$44.10

Source: Economic Modeling Specialists International (EMSI)

Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing Computer Aided Drafting and Manufacturing completers, and what they are looking for in potential candidates. To identify job postings related to Computer Aided Drafting and Manufacturing, the following standard occupational classifications were used:

17-3011	Architectural and Civil Drafters
17-3013	Mechanical Drafters
17-3029.06	Manufacturing Engineering Technologists

Top Occupations

In 2018, there were 92 employer postings for occupations related to Computer Aided Drafting and Manufacturing.

Exhibit 4 – Top occupations in job postings and risk of automation tables

SOC Code	Occupation	Job Postings, Full Year 2018
17-3013	Mechanical Drafters	79
17-3011	Architectural and Civil Drafters	13
17-3029.06	Manufacturing Engineering Technologists	0

Source: Labor Insight/Jobs (Burning Glass)

SOC Code	Occupation	Risk of Automation
17-3013	Mechanical Drafters	Low
17-3011	Architectural and Civil Drafters	Low
17-3029.06	Manufacturing Engineering Technologists	Low

Source: Labor Insight/Jobs (Burning Glass)

Top Titles

The top job titles for employers posting ads for jobs related to Computer Aided Drafting and Manufacturing are listed in Exhibit 5. Mechanical Designer is mentioned as the job title in 20% of all relevant job postings (18 postings).

Exhibit 5 –Job titles

Title	Job Postings, Full Year 2018
Mechanical Designer	18
Mechanical Draughter	10
Drafter	9
Drafting Computer Aided Drafting/Design (CAD) Technician	7
Computer Aided Drafting/Design (CAD) Designer	6
CAD Drafter	5
Designer/Drafter	4

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 6 lists the major employers hiring professionals in the Computer Aided Drafting and Manufacturing field. The top employer posting job ads was Danaher Corporation. The top worksite cities in the region for these occupations were Santa Barbara, Thousand Oaks, Goleta, Oxnard, and Santa Clarita.

Exhibit 6 – Top employers (n=44)

Employer	Job Postings, Full Year 2018
Danaher Corporation	3
Donatech	3
Leica Biosystems	3
Northrop Grumman	3
Corning Incorporated	2

Source: Labor Insight/Jobs (Burning Glass)

Skills

SolidWorks is the most sought after skill for employers hiring for jobs related to Computer Aided Drafting and Manufacturing.

Exhibit 7 –Job skills (n=82)

Skills	Job Postings, Full Year 2018
SolidWorks	53
AutoCAD	44
Computer Aided Drafting/Design (CAD)	22
Engineering Drawings	18
Geometric Dimensioning and Tolerance (GD&T)	15

Source: Labor Insight/Jobs (Burning Glass)

Industry Concentration

Exhibit 9 shows the industries where most drafters are employed in the South Central Coast region. Note: 58% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Exhibit 9 – Industries employing the most drafters, 2018

Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
Manufacturing	22	56%
Professional, Scientific, and Technical Services	15	39%
Administrative and Support and Waste Management and Remediation Services	1	3%
Agriculture, Forestry, Fishing, and Hunting	1	3%

Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 10 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training needed to attain competency in the occupation.

Exhibit 10 – Education and training requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training
17-3011	Architectural and Civil Drafters	Associate's Degree	None
17-3013	Mechanical Drafters	Associate's Degree	None
17-3029.06	Manufacturing Engineering Technologists	Associate's Degree	None

Source: Bureau of Labor Statistics Employment Projections (Educational Attainment)

Regional Completions and Openings

There were 98 regional completions (2017) and 162 regional openings (2017) in the South Central Coast region in programs related to the occupations identified as related to Computer Aided Drafting and Manufacturing.

Exhibit 11 – Completions and Openings

9 Regional Institutions had Related Programs (2017)	98 Regional Completions (2017)	162 Annual Openings (2017)
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Source: Economic Modeling Specialists International (EMSI)

Related Programs

CIP Code	Program	Completions (2017)
15.1301	Drafting and Design Technology/Technician, General	42
15.1303	Architectural Drafting and Architectural CAD/CADD	21
15.1306	Mechanical Drafting and Mechanical Drafting CAD/CADD	15
15.0000	Engineering Technology, General	10
04.0901	Architectural Technology/Technician	6
15.9999	Engineering Technologies and Engineering-Related Fields, Other	4
15.0505	Solar Energy Technology/Technician	0
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	0
15.1503	Packaging Science	0

Source: Economic Modeling Specialists International (EMSI)

Student Outcomes

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Computer Aided Drafting and Manufacturing program (TOP Code: 0956.00) in the South Central Coast region for the 2015-16 academic year.

- The median annual wage for students after exiting is \$30,137
- 60% of students are earning a living wage
- 69% of students are employed within a year after completing a program
- Students who transfer and earn a bachelor's degree could pursue the following careers:
 - Occupational Health and Safety Specialists

Source: CTE LaunchBoard

Sources

O*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, Statewide CTE Outcomes Survey, Employment Development Department Unemployment Insurance Dataset

Notes

Data included in this analysis represents the labor market demand for positions most closely related to computer aided drafting and manufacturing. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.