

Labor Market Analysis: 0953.00 – Drafting Technology

Industrial Design (A.S. Degree)

Los Angeles Center of Excellence, October 2022

Summary

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> (see comments below)	
Living Wage: (Entry-Level, 25 th)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>	

The Los Angeles Center of Excellence for Labor Market Research (LA COE) prepared this report to provide regional labor market supply and demand data related to two middle-skill occupations:

- **Mechanical Drafters (17-3013):** Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.¹
- **Industrial Engineering Technologists and Technicians (17-3026):** Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.²

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.³ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

¹ [Mechanical Drafters \(bls.gov\)](#)

² [Industrial Engineering Technologists and Technicians \(bls.gov\)](#)

³ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Based on the available data, there does not appear to be a supply gap for the occupations of interest. While the data suggests the three-year average number of awards conferred (supply) is more than the number of annual openings (demand), this supply/demand difference is considered “supply met” since it is within an acceptable margin and future community college programming should be explored. While this program does not meet the traditional supply/demand endorsement criteria, there may be demand for these workers from local employers that is not reflected in traditional labor market data. **For this reason, real-time labor market data is included in this report as well – to provide a more nuanced view of the regional job market.**

The occupations of interest have entry-level wages that exceed the self-sufficiency standard wage in both Los Angeles and Orange County, and the Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for both occupations in this report. Therefore, **due to some of the criteria being met, the LA COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, **250 jobs are projected to be available annually** in the region due to retirements and workers leaving the field, **which is less than the three-year average of 303 awards conferred** by educational institutions in the region.
 - Although there are more awards conferred than job openings, the data suggests that the **demand has been met for these occupations within the LA/OC region** since the three-year average number of awards (supply) is within the acceptable margin of annual job openings (demand).
 - Over the past 12 months, there have been **7,814 online job postings related to the two occupations of interest**. The highest number of job postings were for maintenance technicians, manufacturing technicians, production technicians, maintenance workers, and machine operators.
- **Living Wage Criteria** – In Los Angeles County, both occupations have entry-level wages **above** the self-sufficiency standard wage (\$18.10/hour).⁴
- **Educational Criteria** – The Bureau of Labor Statistics (BLS) lists an **associate degree** as the **typical entry-level education** for both occupations in this report.
 - National-level educational attainment data indicates between **51% and 57% of current workers in the field have completed some college or an associate degree as their highest level of education.**

Supply:

- Between 2018 and 2021, **19 community colleges** in the greater LA/OC region issued awards in programs that have historically trained for the occupations of interest, conferring an average of **294 awards**.

⁴ Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

- Between 2017 and 2020, non-community college institutions throughout the greater LA/OC region conferred an average of **8 awards in relevant programs**.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the two occupations of interest. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 4% through 2026. However, there will be 250 job openings per year through 2026 due to retirements and workers leaving the field.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties⁵

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	1,682	1,597	(85)	(5%)	154
Orange	1,015	1,003	(12)	(1%)	96
Total	2,697	2,600	(97)	(4%)	250

Wages

The labor market endorsement in this report considers the entry-level hourly wages for the occupations of interest in Los Angeles County, as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County – Both occupations in this report have entry-level wages **above** the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$22.00 and \$22.06, while experienced workers can expect to earn wages between \$37.00 and \$37.34.

Exhibit 2: Hourly Earnings for Occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Mechanical Drafters (17-3013)	\$22.00	\$28.38	\$37.34
Industrial Engineering Technologists and Technicians (17-3026)	\$22.06	\$28.62	\$37.00

⁵ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

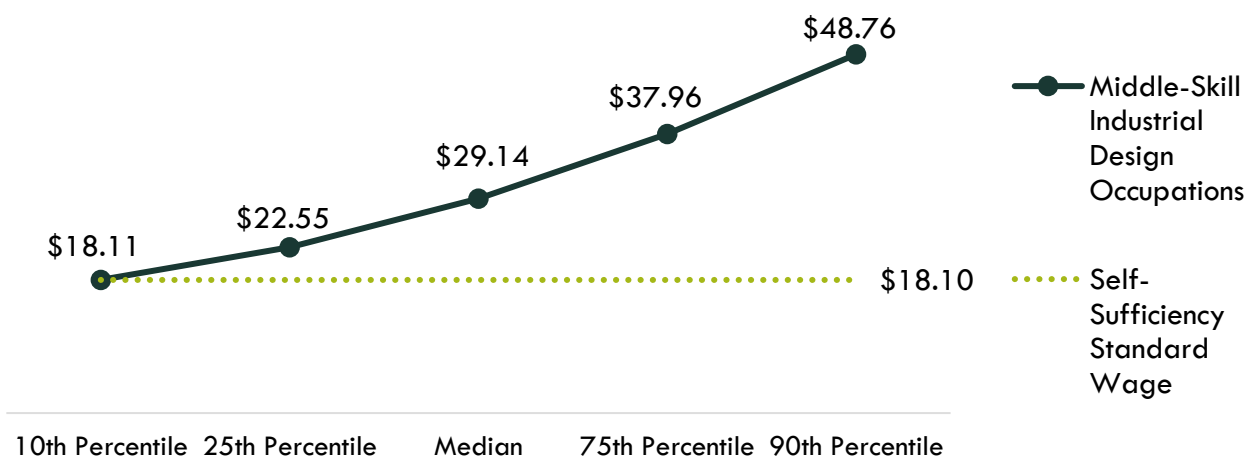
Orange County – Both occupations in this report have entry-level wages **above** the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$22.64 and \$24.27, while experienced workers can expect to earn wages between \$37.96 and \$40.23.

Exhibit 3: Hourly Earnings for Occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Mechanical Drafters (17-3013)	\$22.64	\$29.03	\$37.96
Industrial Engineering Technologists and Technicians (17-3026)	\$24.27	\$31.26	\$40.23

On average, the entry-level earnings for the occupations in this report are \$22.55; this is above the self-sufficiency standard wage for one single adult in Los Angeles County (\$18.10). Exhibit 4 shows the average wages for the occupations in this report, from entry-level to experienced workers.

Exhibit 4: Average Hourly Earnings for Industrial Design Occupations in LA/OC



Job Postings

Over the past 12 months, there have been 7,814 unique online job postings for the two occupations of interest. Exhibit 5 shows the number of job postings by occupation. The majority of job postings (93%) were for *industrial engineering technologists and technicians*, followed by *mechanical drafters* (7%). The highest number of job postings were maintenance technicians, manufacturing technicians, production technicians, maintenance workers, and machine operators. The top skills were machinery, preventative maintenance, Good Manufacturing Practices, production equipment, and programmable logic controllers. The top employers, by number of job postings, in the region were Aerotek, Puls, and B. Braun.

Exhibit 5: Job postings by occupation (last 12 months)

Industrial Engineering Technologists and Technicians (17-3026)	7,258
Mechanical Drafters (17-3013)	556

Educational Attainment

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for both occupations in this report. National-level educational attainment data indicates between 51% and 57% of current workers in the field have completed some college or an associate degree as their highest level of education.

Educational Supply

Community College Supply – Exhibit 6 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Mt San Antonio, Fullerton, and Santa Ana.

Exhibit 6: Regional community college awards (certificates and degrees), 2018-2021

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
0953.00	Drafting Technology	Cerritos	35	14	9	19
		Citrus	13	15	12	13
		East LA	36	7	20	21
		El Camino	21	9	7	12
		LA Harbor	3	-	-	1
		LA Pierce	5	2	8	5
		LA Valley	1	3	-	1
		Long Beach	-	1	-	0
		Mt San Antonio	42	23	32	32
		Pasadena	5	6	6	6
		Rio Hondo	14	13	8	12
		LA Subtotal	175	93	102	123
		Fullerton	5	4	10	6
		Golden West	57	9	4	23
		Irvine Valley	2	10	6	6
		Saddleback	1	2	1	1
Santa Ana	15	27	30	24		

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
		OC Subtotal	80	52	51	61
Supply Subtotal/Average			255	145	153	184
0953.40	Mechanical Drafting	Glendale	5	11	13	10
		LA Pierce	1	-	-	0
		LA Valley	5	9	5	6
		Long Beach	8	10	7	8
		LA Subtotal	19	30	25	25
		Irvine Valley	4	5	3	4
		OC Subtotal	4	5	3	4
Supply Subtotal/Average			23	35	28	29
0956.00	Manufacturing and Industrial Technology	Cerritos	2	-	1	1
		El Camino	2	-	-	1
		Glendale	-	2	-	1
		LA Trade	5	9	9	8
		LA Valley	3	9	7	6
		Mt San Antonio	13	14	4	10
		LA Subtotal	25	34	21	27
		Fullerton	9	38	20	22
		Irvine	3	-	4	2
		Saddleback	11	7	4	7
		Santa Ana	-	3	2	2
		Santiago Canyon	41	10	12	21
		OC Subtotal	64	58	42	55
Supply Subtotal/Average			89	92	63	81
Supply Total/Average			367	272	244	294

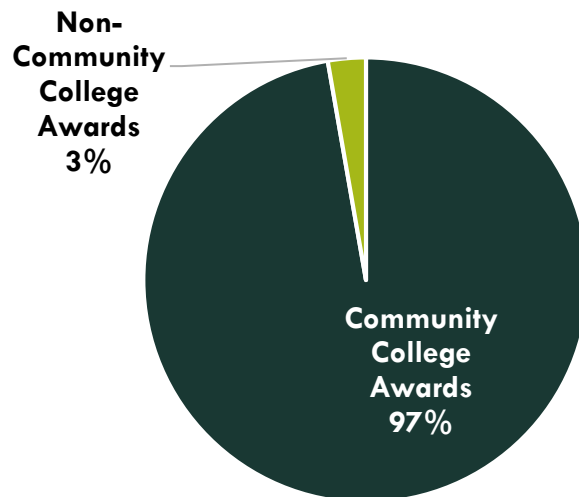
Non-Community College Supply – For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that may provide training programs for the occupations of interest. Exhibit 7 shows the annual and three-year average number of awards conferred in relevant programs. Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, non-community college institutions in the region conferred an average of 8 awards.

Exhibit 7: Regional non-community college awards, 2017-2020

CIP	Program	Institution	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
15.0803	Automotive Engineering Technology/ Technician	Hacienda La Puente Adult Education	-	-	25	8
Supply Total/Average			-	-	25	8

Exhibit 8 shows the relationship between the proportion of community college awards conferred in LA/OC versus the number of non-community college awards for the programs in this report. Nearly all of the awards conferred in the LA/OC region are by community colleges.

Exhibit 8: Community College Awards Compared to Non-Community College Awards in LA/OC Region, 3-Year Average



Appendix A: Occupational demand and wage data by county

Exhibit 9. Los Angeles County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Mechanical Drafters (17-3013)	1,014	926	(89)	(9%)	92	\$22.00	\$28.38	\$37.34
Industrial Engineering Technologists and Technicians (17-3026)	667	671	3	1%	63	\$22.06	\$28.62	\$37.00
Total	1,682	1,597	(85)	(5%)	154	-	-	-

Exhibit 10. Orange County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Mechanical Drafters (17-3013)	584	563	(21)	(4%)	54	\$22.64	\$29.03	\$37.96
Industrial Engineering Technologists and Technicians (17-3026)	431	440	9	2%	42	\$24.27	\$31.26	\$40.23
Total	1,015	1,003	(12)	(1%)	96	-	-	-

Exhibit 11. Los Angeles and Orange Counties

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Mechanical Drafters (17-3013)	1,598	1,488	(110)	(7%)	146	Associate's degree
Industrial Engineering Technologists and Technicians (17-3026)	1,099	1,111	13	1%	105	Associate's degree
Total	2,697	2,600	(97)	(4%)	250	-

Appendix B: Sources

- O*NET Online
- Labor Insight (Burning Glass Technologies)
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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