

**Labor Market Analysis: 0953.40/Mechanical Drafting
Computer Aided Design-Mechanical
(Associate of Science degree; Certificate requiring 16 to < 30 semester units)
Los Angeles Center of Excellence, January 2023**

Summary

Program Endorsement:	Endorsed: All Criteria Met <input checked="" type="checkbox"/>	Endorsed: Some Criteria Met <input type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	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 four middle-skill occupations:

- **Architectural and Civil Drafters (17-3011)** 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.¹
- **Mechanical Drafters (17-3013)** Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.²
- **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.³
- **Mechanical Engineering Technologists and Technicians (17-3027)** Apply theory and principles of mechanical engineering to modify, develop, test, or adjust machinery and equipment under direction of engineering staff or physical scientists.⁴

¹ [Drafters : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

² [Drafters : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

³ [Industrial Engineering Technologists and Technicians : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

⁴ [Mechanical Engineering Technologists and Technicians : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.⁵ 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.

Based on the available data, there appears to be a supply gap for these mechanical drafting occupations in the region. Furthermore, entry-level wages exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, and the Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for each of the occupations in this report.

Therefore, due to all the criteria being met, the LA COE endorses this proposed program.

Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, **1,072 jobs are projected to be available annually** in the region due to retirements and workers leaving the field, **which is more than the three-year average of 597 awards conferred** by educational institutions in the region.
- **Living Wage Criteria** – Within Los Angeles County, **all four mechanical drafting occupations** in this report have **entry-level wages above the self-sufficiency standard hourly wage** (\$18.10/hour).⁶
- **Educational Criteria** – The Bureau of Labor Statistics (BLS) lists an **associate degree** as the typical entry-level education for all four occupations in this report.
 - Furthermore, the national-level educational attainment data indicates **between 51% and 57% of workers in the field have completed some college or an associate degree.**

Supply:

- There are **21 community colleges** in the greater LA/OC region that issue awards related to mechanical drafting, conferring an average of **597 awards annually** between 2018 and 2021.
- Currently, there are **no non-community college institutions** in the LA/OC region that have conferred awards training for middle-skill mechanical drafting occupations in the past three years.

⁵ 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.

⁶ Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these mechanical drafting occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 2% through 2026. However, there will be nearly 1,100 job openings per year through 2026 due to retirements and workers leaving the field.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties⁷

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	7,444	7,266	(177)	(2%)	709
Orange	3,827	3,815	(12)	(0%)	362
Total	11,270	11,082	(189)	(2%)	1,072

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these mechanical drafting occupations 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 greater LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County— All four mechanical drafting occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$18.10/hour in Los Angeles County). Typical entry-level hourly wages are in a range between \$20.51 and \$23.69. Experienced workers can expect to earn wages between \$36.43 and \$46.09.

Exhibit 2: Hourly Earnings for Occupations in LA County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Architectural and Civil Drafters (17-3011)	\$22.32	\$28.56	\$36.43
Mechanical Drafters (17-3013)	\$20.51	\$27.72	\$38.06
Industrial Engineering Technologists and Technicians (17-3026)	\$21.31	\$28.25	\$36.99
Mechanical Engineering Technologists and Technicians (17-3027)	\$23.69	\$34.11	\$46.09

⁷ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

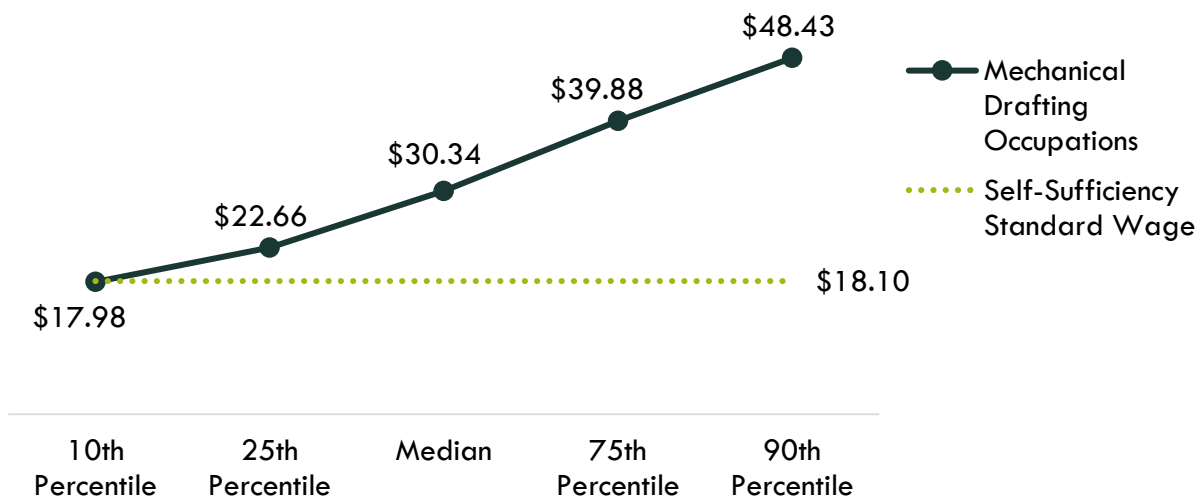
Orange County—All four occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$20.63/hour in Orange County). Typical entry-level hourly wages are in a range between \$23.09 and \$24.55. Experienced workers can expect to earn wages between \$37.76 and \$46.68.

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)
Architectural and Civil Drafters (17-3011)	\$24.20	\$30.39	\$38.32
Mechanical Drafters (17-3013)	\$23.09	\$29.22	\$37.76
Industrial Engineering Technologists and Technicians (17-3026)	\$24.46	\$31.36	\$40.25
Mechanical Engineering Technologists and Technicians (17-3027)	\$24.55	\$35.20	\$46.68

On average, the entry-level earnings for the occupations in this report are \$22.66; this is above the living wage for one single adult in Los Angeles County (\$18.10). Exhibit 4 shows the average wage for the occupations in this report, from entry-level to experienced workers.

Exhibit 4: Average Hourly Earnings for Mechanical Drafting Occupations in LA/OC

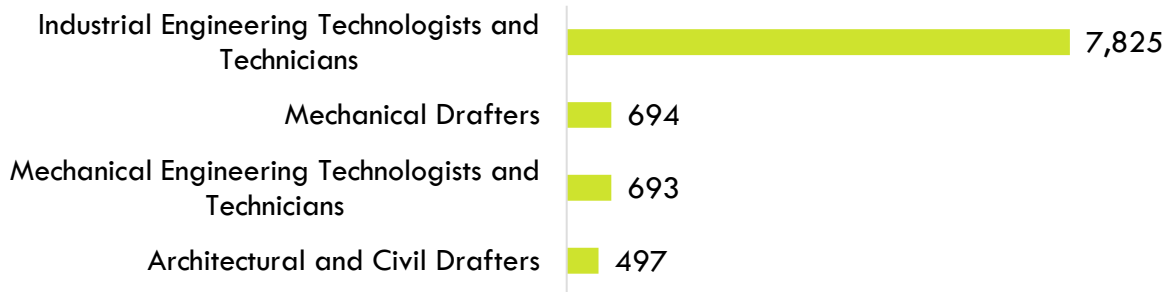


Job Postings

There were 9,709 online job postings related to mechanical drafting listed in the past 12 months. Exhibit 5 displays the number of job postings by occupation. The majority of job postings (81%) were for *industrial engineering technologists and technicians* (81%), followed by *mechanical drafters* (7%) and *mechanical engineering technologists and technicians* (7%). The highest number of job postings were for maintenance technicians, manufacturing technicians, production technicians,

maintenance workers, and mechanical technicians. The top skills were machinery, preventative maintenance, AutoCAD, Good Manufacturing Practices (GMP), and production equipment. The top three employers, by number of job postings, in the region were Aerotek, Puls, and B. Braun.

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



Educational Attainment

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for all four occupations in this report. Furthermore, the national-level educational attainment data indicates between 51% and 57% of workers in the field have completed some college or an associate degree. Of the 53% of mechanical drafting job postings listing a minimum education requirement in the greater Los Angeles/Orange County region, 74% (3,753) requested high school or vocational training, 13% (570) requested an associate degree, and 13% (345) requested a bachelor’s degree.

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, East LA, and Cerritos. Currently, there are no non-community college institutions in the LA/OC region that have conferred awards training for middle-skill mechanical drafting occupations in the past three years.

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
0201.00	Architecture and Architectural Technology	Cerritos	24	44	28	32
		Citrus	3	6	6	5
		Compton	2	-	-	1
		East LA	57	25	16	33
		El Camino	14	21	5	13
		Glendale	6	6	3	5
		LA Harbor	5	4	4	4
		LA Pierce	9	4	16	10

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
		LA Trade-Tech	11	8	7	9
		LA Valley	1	3	4	3
		Long Beach	14	13	11	13
		Mt San Antonio	97	51	61	70
		Pasadena	16	18	12	15
		Rio Hondo	12	3	3	6
		LA Subtotal	271	206	176	218
		Fullerton	5	12	4	7
		Orange Coast	40	59	38	46
		Saddleback	15	8	3	9
		OC Subtotal	60	79	45	61
		Supply Subtotal/Average	331	285	221	279
		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	2	10	6	6
		Saddleback	1	2	1	1
		Santa Ana	15	27	30	24
		OC Subtotal	80	52	51	61
		Supply Subtotal/Average	255	145	153	184
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	2	10	6	6
		Saddleback	1	2	1	1
		Santa Ana	15	27	30	24
		OC Subtotal	80	52	51	61
		Supply Subtotal/Average	255	145	153	184
0953.10	Architectural Drafting	Citrus	-	2	1	1
		Long Beach	7	9	5	7
		Rio Hondo	8	9	6	8
		LA Subtotal	15	20	12	16

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
		Fullerton	3	1	1	2
		Santa Ana	3	1	2	2
		OC Subtotal	6	2	3	4
		Supply Subtotal/Average	21	22	15	19
0953.20	Civil Drafting	Rio Hondo	1	3	3	2
		LA Subtotal	1	3	3	2
		Irvine	1	3	1	2
		OC Subtotal	1	3	1	2
		Supply Subtotal/Average	2	6	4	4
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	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-Tech	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	721	585	484	597

Appendix A: Occupational demand and wage data by county

Exhibit 7. 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)
Architectural and Civil Drafters (17-3011)	4,127	4,023	(104)	(3%)	391	\$22.32	\$28.56	\$36.43
Mechanical Drafters (17-3013)	1,423	1,372	(51)	(4%)	138	\$20.51	\$27.72	\$38.06
Industrial Engineering Technologists and Technicians (17-3026)	735	761	26	3%	74	\$21.31	\$28.25	\$36.99
Mechanical Engineering Technologists and Technicians (17-3027)	1,158	1,111	(47)	(4%)	106	\$23.69	\$34.11	\$46.09
Total	7,444	7,266	(177)	(2%)	709	-	-	-

Exhibit 8. 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)
Architectural and Civil Drafters (17-3011)	2,244	2,246	3	0%	214	\$24.20	\$30.39	\$38.32
Mechanical Drafters (17-3013)	534	517	(18)	(3%)	50	\$23.09	\$29.22	\$37.76
Industrial Engineering Technologists and Technicians (17-3026)	423	432	9	2%	41	\$24.46	\$31.36	\$40.25
Mechanical Engineering Technologists and Technicians (17-3027)	626	620	(6)	(1%)	57	\$24.55	\$35.20	\$46.68
Total	3,827	3,815	(12)	(0%)	362	-	-	-

Exhibit 9. Los Angeles and Orange Counties

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Architectural and Civil Drafters (17-3011)	6,371	6,269	(102)	(2%)	605	Associate degree
Mechanical Drafters (17-3013)	1,958	1,889	(69)	(4%)	188	Associate degree
Industrial Engineering Technologists and Technicians (17-3026)	1,158	1,193	35	3%	115	Associate degree
Mechanical Engineering Technologists and Technicians (17-3027)	1,784	1,731	(53)	(3%)	163	Associate degree
Total	11,270	11,082	(189)	(2%)	1,072	-

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)

For more information, please contact:

Luke Meyer, Director
 Los Angeles Center of Excellence
Lmeyer7@mtsac.edu

