

Program Endorsement Brief: 0956/Manufacturing and Industrial Technology CNC Operator Certificate

Orange County Center of Excellence, August 2019

Summary Analysis

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to four middle-skill occupations related to CNC operators: Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011), Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic (51-4012), Machinists (51-4041), and Tool and Die Makers (51-4111). Middle-skill occupations typically require some postsecondary education, but not a bachelor's degree.¹ 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 relevant occupations.

Based on the available data it appears that there is a supply gap for these middle-skill machining occupations in the region. **Therefore, the COE endorses this proposed program for the following reasons:**

Demand:

- Over the next five years, there is projected to be **2,558 jobs available annually** in the region due to retirements and workers leaving the field, **which is more than the 30 awards conferred annually** by educational institutions in the region.

Supply:

- **Fifteen educational institutions in Los Angeles/Orange County, all of which are community colleges** have programs related to manufacturing and machining, conferring an average of **304 awards annually** between 2015 and 2018.

Occupational Demand

Exhibit 1, on the following page, shows the five-year occupational demand projections for these four middle-skill occupations related to CNC operators in Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 3% through 2023. However, due to retirements and workers leaving the field, there will be more than 2,500 job openings per year through 2023.

¹ 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.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties²

Geography	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change	Annual Openings
Los Angeles	16,497	15,714	(783)	(5%)	1,602
Orange	9,343	9,424	81	1%	956
Total	25,840	25,139	(701)	(3%)	2,558

Wages—Typical entry-level hourly wages for middle-skill occupations related to CNC operation throughout the region are between \$14.73 and \$22.04.³ Typical entry-level wages for three of the occupations in this report are higher than the California Family Needs Calculator hourly wages for one adult in the region (\$15.04 in Los Angeles County and \$17.36 in Orange County). Computer-controlled machine tool operators, metal and plastic (51-4011) have typical entry-level wages of \$14.73 per hour, which is lower than the California Family Needs Calculator hourly wages in both counties. Regional average wages are below the average statewide wage of \$22.98 for these occupations. Wage information, by county, is included in Appendix A.

Job Postings—There were 3,795 online middle-skill job postings related to CNC operators listed in the past 12 months. The majority of job postings were for: machinist, CNC machinist, CNC operator, CNC programmers and machine operator. Top specialized skills were: computer numerical control (CNC), machining, lathes, micrometers and computerized numerical control lathes. The top three employers, by number of job postings, in the region were: Arconic, Alcoa and Precision Castparts. Of the 3,795 online job postings, 43% listed a minimum education requirement.

Educational Attainment—The Bureau of Labor Statistics (BLS) lists a high school diploma as the typical entry-level education required for computer-controlled machine tool operators, metal and plastic, and machinists; and a postsecondary non-degree award for computer numerically controlled machine tool programmers, metal and plastic, and tool and die makers. The national-level educational attainment data indicates that between 40.3% and 48.3% of workers in the field have completed some college or an associate degree. Of the 43% of job postings listing a minimum education requirement in Los Angeles/Orange County, 97% (1,590) requested a high school diploma or vocational training and 3% (51) requested an associate degree.

Supply

Community College Supply—Exhibit 2, on the following page, shows the three-year average number of awards conferred by community colleges in the related TOP codes: Manufacturing and Industrial Technology (0956.00) and Machining and Machine Tools (0956.30). Over the past three years, Orange Coast had the most completions in the region. Between July 2018 and June 2019, there were six other related program recommendation requests from regional community colleges. Between 2013 and 2016, there were zero non-community college institutions that conferred awards in related training programs.

² Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

³ Entry-level wage is defined as the 25th percentile hourly wage. Wages for experienced workers are defined as the 75th percentile hourly wage.

Exhibit 2: Regional community college awards (certificates and degrees), 2015-2018

TOP Code	Program	College	2015-16 Awards	2016-17 Awards	2017-18 Awards	3-Year Award Average
0956.00	Manufacturing and Industrial Technology	Cerritos	4	3	6	4
		Compton	-	-	2	2
		El Camino	1	3	3	2
		Fullerton	10	3	11	8
		Irvine	9	7	1	6
		LA Valley	3	4	2	3
		Mt San Antonio	12	19	9	13
		Saddleback	6	5	9	7
		Santa Ana	4	0	1	2
		Santiago Canyon	-	-	27	27
Subtotal/Average			49	44	71	55
0956.30	Machining and Machine Tools	Cerritos	10	22	38	23
		Compton	5	3	1	3
		El Camino	53	39	32	41
		Fullerton	3	5	9	6
		Glendale	8	2	0	3
		LA Pierce	1	11	10	7
		LA Trade-Tech	19	19	17	18
		LA Valley	16	7	3	9
		Orange Coast	72	54	92	73
		Pasadena	5	0	0	2
		Santa Ana	51	64	78	64
Subtotal/Average			243	226	280	250
Total/Average			292	270	351	304

Appendix A: Occupational demand and wage data by county

Exhibit 4. Los Angeles County

Occupation (SOC)	2018 Jobs	2023 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)
Machinists (51-4041)	10,766	10,258	(508)	(5%)	1,055	\$15.84	\$20.80	\$26.48
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	4,160	3,934	(226)	(5%)	398	\$14.56	\$18.59	\$23.88
Tool and Die Makers (51-4111)	829	781	(48)	(6%)	75	\$19.67	\$26.85	\$31.60
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic (51-4012)	741	742	1	0%	73	\$21.75	\$30.08	\$37.47
Total	16,497	15,714	(783)	(5%)	1,602			

Exhibit 5. Orange County

Occupation (SOC)	2018 Jobs	2023 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)
Machinists (51-4041)	6,147	6,195	48	1%	633	\$16.33	\$21.43	\$27.28
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	2,358	2,364	6	0%	235	\$15.04	\$19.20	\$24.67
Tool and Die Makers (51-4111)	437	439	2	0%	42	\$20.55	\$28.05	\$33.01
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic (51-4012)	401	426	25	6%	46	\$22.60	\$31.25	\$38.93
Total	9,343	9,424	81	1%	956			

Exhibit 5. Los Angeles and Orange Counties

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Machinists (51-4041)	16,914	16,452	(462)	(3%)	1,688	\$16.01	\$21.03	\$26.78
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	6,518	6,298	(220)	(3%)	634	\$14.73	\$18.81	\$24.18
Tool and Die Makers (51-4111)	1,266	1,220	(46)	(4%)	117	\$19.97	\$27.22	\$32.12
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic (51-4012)	1,142	1,168	26	2%	119	\$22.04	\$30.47	\$38.01
Total	25,840	25,139	(701)	(3%)	2,558			

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (EMSI)
- Employment Development Department, Labor Market Information Division, OES
- Employment Development Department, Unemployment Insurance Dataset
- Integrated Postsecondary Education Data System (IPEDS)
- Living Insight Center for Community Economic Development
- California Community Colleges Chancellor’s Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor’s Office Curriculum Inventory (COCI 2.0)

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