Manufacturing and Industrial Technology (TOP 0956.00)

November 2021

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

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Program Recommendation

This report was compiled by the South Central Coast[1] Center of Excellence to provide regional labor market data for the program recommendation – Manufacturing and Industrial Technology. 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 of jobs related to Manufacturing and Industrial Technology are expected to remain steady** for Computer Numerically Controlled Tool Operators, and **increase** for the other three related occupations.

- Manufacturing and Industrial Technology is anticipated to experience a **medium risk of automation for** Computer Numerically Controlled Tool Programmers, and **a high risk of automation** for the other three related occupations.

- In 2020 there were 83 regional completions in programs related to the occupations identified as aligned with Manufacturing and Industrial Technology and 468 openings, indicating an **undersupply**.

- Typical entry-level education is a **postsecondary nondegree award** for Computer Numerically Controlled Tool Programmers, and **a high school diploma or equivalent** for the other three occupations.

- Completers of Manufacturing and Industrial Technology programs from the 2017-2018 academic year in the South Central Coast region had a **median annual wage upon completion of $34,802.**

- 68% of students are **employed within a year** after completing a program.

- 56% of students **attained a living wage** within a year of completion.

- Completers experienced an average of +**46%** change in earnings after exiting.

- 84% of students were **part time**, 23% **skill builders**, 35% **first-generation**, and 72% **economically disadvantaged**.

[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

There are four occupations in the standard occupational classification (SOC) system that were identified as related to Manufacturing and Industrial Technology for this analysis. 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
51-4041	**Machinists**	Set up and operate a variety of machine tools to produce precision parts and instruments out of metal. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.	CNC Machinist (Computer Numerically Controlled Machinist), CNC Machinist (Computer Numerically Controlled Machinist), Gear Machinist, Machine Repair Person, Machinist, Maintenance Machinist, Manual Lathe Machinist, Production Machinist, Tool Room Machinist
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	Set up, operate, or tend more than one type of cutting or forming machine tool or robot.	Cell Technician, CNC Machine Setter (Computer Numerically Controlled Machine Setter), Fabrication Set-Up Person, Injection Molding Technician, Machine Operator, Machine Technician, Mold Setter, Production Operator, Shear Operator, Tooling Set-Up Person
51-9161	**Computer Numerically Controlled Tool Operators**	Operate computer-controlled tools, machines, or robots to machine or process parts, tools, or other work pieces made of metal, plastic, wood, stone, or other materials. May also set up and maintain equipment.	Brake Press Operator, Computer Numerical Control Lathe Operator (CNC Lathe Operator), CNC Machine Operator, Computer Numerical Control Machinist, Computer Numerical Control Mill Operator, CNC Operator, CNC Set-Up and Operator, Machine Operator, Machine Set-Up Operator, Machinist
51-9162	**Computer Numerically Controlled Tool Programmers**	Develop programs to control machining or processing of materials by automatic machine tools, equipment, or systems. May also set up, operate, or maintain equipment.	CAD CAM Programmer (Computer-Aided Design Computer-Aided Manufacturing Programmer), Computer Numerical Control Machinist, CNC Programmer, Programmer

Source: O*NET Online

Current and Future Employment

In the South Central Coast region, the number of jobs related to Manufacturing and Industrial Technology are expected to remain steady for Computer Numerically Controlled Tool Operators, and increase for the other three related occupations.

Exhibit 2 – Five-year projections for Manufacturing and Industrial Technology in the South Central Coast region

SOC	Occupation	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change
51-4041	**Machinists**	2,164	2,292	128	6%
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	391	439	48	12%
51-9161	**Computer Numerically Controlled Tool Operators**	1,105	1,086	-19	-2%
51-9162	**Computer Numerically Controlled Tool Programmers**	119	131	12	10%

Source: Economic Modeling Specialists International (EMSI)

Earnings

In the South Central Coast region, the average wage for the listed occupations is $21.11 per hour.

Exhibit 3 contains hourly wages and annual average earnings for these occupations. 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 Manufacturing and Industrial Technology in the South Central Coast region

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
51-4041	**Machinists**	$17.18	$22.21	$28.84
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	$14.23	$16.53	$20.28
51-9161	**Computer Numerically Controlled Tool Operators**	$16.42	$20.22	$26.31
51-9162	**Computer Numerically Controlled Tool Programmers**	$29.55	$35.26	$39.72

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 looking for CNC machinists, and what they are looking for in potential candidates. To identify job postings related to Manufacturing and Industrial Technology the following standard occupational classifications were used:

51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic
51-4041	Machinists
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic

Top Occupations

In 2019, there were 547 employer postings for the occupations related to Manufacturing and Industrial Technology.

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

SOC Code	Occupation	Job Postings, Full Year 2019
51-4041	**Machinists**	468
51-4012	**Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic**	76
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	3

Source: Labor Insight/Jobs (Burning Glass)

SOC Code	Occupation	Risk of Automation
51-4041	**Machinists**	High
51-4012	**Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic**	Medium
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	High

Source: Labor Insight/Jobs (Burning Glass)

Top Titles

The top job titles for employers posting ads for jobs related to Manufacturing and Industrial Technology are listed in Exhibit 5. CNC Machinist is mentioned as the job title in 18% of all relevant job postings (101 postings).

Exhibit 5 –Job Titles

Title	Job Postings, Full Year 2019
CNC Machinist	101
Machinist	57
CNC Programmer	35
CNC Lathe Machinist	14
CNC Machinist – Mills/Lathe, 2nd	14

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 6 lists the major employers hiring professionals in the Manufacturing and Industrial Technology field. The top employer posting job ads was Rexnord. The top worksite cities in the region for these occupations were Santa Clarita, Simi Valley, Palmdale, Camarillo, and Moorpark.

Exhibit 6 – Top Employers (n=277)

Employer	Job Postings, Full Year 2019
Rexnord	31
ITT Industries Inc	30
Lockheed Martin Corp	19
Northrop Grumman	12
Precision Castparts	11

Source: Labor Insight/Jobs (Burning Glass)

Skills

Machining is the most sought after skill for employers hiring for jobs related to Manufacturing and Industrial Technology.

Exhibit 7 –Job Skills (n=417)

Skills	Job Postings, Full Year 2019
Machining	480
Computer Numerical Control (CNC)	447
Lathes	325
Computerized Numerical Control Lathes	148
International Traffic in Arms Regulations (ITAR)	146
Machine Tools	128
Hand Tools	115

Source: Labor Insight/Jobs (Burning Glass)

Industry Concentration

Exhibit 8 shows the industries with most Manufacturing and Industrial Technology postings in the South Central Coast. Note: 33% 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 8 – Industries employing the most in the Manufacturing and Industrial Technology field, 2019

Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
Manufacturing	237	64.8%
Professional, Scientific, and Technical Services	75	20.5%
Administrative and Support and Waste Management and Remediation Services	27	7.4%
Public Administration	17	4.6%
Transportation and Warehousing	6	1.6%

Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 9 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 9 – Education and Training Requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training
51-4041	**Machinists**	High school diploma or equivalent	Long-term on-the-job training
51-4081	**Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	High school diploma or equivalent	Moderate-term on-the-job training
51-9161	**Computer Numerically Controlled Tool Operators**	High school diploma or equivalent	Moderate-term on-the-job training
51-9162	**Computer Numerically Controlled Tool Programmers**	Postsecondary nondegree award	Moderate-term on-the-job training

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

Regional Completions and Openings

There were 83 regional completions (2020) and 468 regional openings (2020) in the South Central Coast region in programs related to the occupations identified as related to Manufacturing and Industrial Technology.

Exhibit 10 – Completions and Openings

5 Regional Institutions had Related Programs (2020)	**83** Regional Completions (2020)	**468** Annual Openings (2020)

Source: Economic Modeling Specialists International (EMSI)

Related Programs

CIP Code	Program	Completions (2020)
15.1301	Drafting and Design Technology/Technician, General	77
48.0503	Machine Shop Technology/Assistant	5
48.0501	Machine Tool Technology/Machinist	1

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 Manufacturing and Industrial Technology Program (TOP: 0956.00) in the South Central Coast region for the 2017-18 academic year.

- Completers of Manufacturing and Industrial Technology programs from the 2017-2018 academic year in the South Central Coast region had a **median annual wage upon completion of $34,802.**
- 68% of students are **employed within a year** after completing a program.
- 56% of students **attained a living wage** within a year of completion.
- Completers experienced an average of +**46%** change in earnings after exiting.
- 84% of students were **part time**, 23% **skill builders**, 35% **first-generation**, and 72% **economically disadvantaged**.

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 represent the labor market demand for relevant positions most closely related to Manufacturing and Industrial Technology. 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 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. All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.