



## Industrial Technology: Industrial Fabrication (Manufacturing and Industrial Technology TOP 0956.00)

March 2022

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<sup>1</sup> Center of Excellence to provide regional labor market data for the program recommendation – Manufacturing and Industrial Technology. This report can help determine whether demand in the local labor market 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 increase** for Welders, Cutters, Solderers, and Brazers and **remain steady** for the other four related occupations.
- Manufacturing and Industrial Technology is anticipated to experience a **low risk of automation** for Industrial Engineering Technologists and Technicians, and a **high risk of automation** for the other four occupations.
- In 2020 there were 124 regional completions in programs related to the occupations identified as aligned with Manufacturing and Industrial Technology and 1,203 openings, indicating an **undersupply**.
- Typical entry-level education is an **Associate's degree** for Industrial Engineering Technologists and Technicians and a **high school diploma or equivalent** for the other four related occupations.
- Completers of Manufacturing and Industrial Technology programs from the 2018-2019 academic year in the South Central Coast region had a **median annual wage upon completion of \$38,570**.
- 50% of students are **employed within a year** after completing a program.
- 54% of students **attained a living wage** within a year of completion.
- Completers experienced an average of **+34% change in earnings after exiting**.
- 83% of students were **part-time**, 18% **skills-builders**, 40% of students were **first-generation**, and 72% **economically disadvantaged**.

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<sup>1</sup> 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 five 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**

| <b>SOC Code</b> | <b>Title</b>   | <b>Description</b>  | <b>Sample of Reported Job Titles</b>   |
|-----------------|--|---|--|
| 17-3026         | <b>Industrial Engineering Technologists and Technicians</b>                    | 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.  | Business Process Analyst, Engineering Technician, Industrial Engineering Analyst, Industrial Engineering Technician, Manufacturing Coordinator, Manufacturing Technology Analyst, Quality Control Engineering Technician (QC Engineering Technician), Quality Management Coordinator, Quality Technician, Service Technician |
| 51-2099         | <b>Assemblers and Fabricators, All Other</b>                                   | All assemblers and fabricators not listed separately.   | --   |
| 51-4041         | <b>Machinists</b>  | 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. | Computer Numeric Controlled Machinist (CNC Machinist), Computer Numerically Controlled Machinist (CNC Machinist), Gear Machinist, Machine Repair Person, Machinist, Maintenance Machinist, Manual Lathe Machinist, Production Machinist, Tool Room Machinist   |
| 51-4121         | <b>Welders, Cutters, Solderers, and Brazers</b>                                | Use hand-welding, flame-cutting, hand-soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.   | --   |
| 51-4122         | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b> | Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.  | Braze Operator, Finishing Technician, Machine Operator, Mig Welder, Robot Operator, Spot Welder  |

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 increase for Welders, Cutters, Solderers, and Brazers and remain steady for the other four 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 |
|--------------------------|---|-----------|-----------|------------------|--------------------|
| 17-3026                  | <b>Industrial Engineering Technologists and Technicians</b>                                 | 220       | 228       | 8                | 4%                 |
| 51-2098<br>(for 51-2099) | <b>Miscellaneous Assemblers and Fabricators (for Assemblers and Fabricators, All Other)</b> | 5,822     | 6,089     | 267              | 5%                 |
| 51-4041                  | <b>Machinists</b>   | 2,177     | 2,265     | 88               | 4%                 |
| 51-4121                  | <b>Welders, Cutters, Solderers, and Brazers</b>   | 1,547     | 1,650     | 103              | 7%                 |
| 51-4122                  | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b>              | 121       | 119       | -2               | -2%                |

Source: Economic Modeling Specialists International (EMSI)

## Earnings

In the South Central Coast region, the average wage for the listed occupations is \$17.93 per hour.

Exhibit 3 contains hourly wages and annual average earnings for these occupations. Entry-level hourly earnings are represented by the 25<sup>th</sup> percentile of wages, median hourly earnings are represented by the 50<sup>th</sup> percentile of wages, and experienced hourly earnings are represented by the 75<sup>th</sup> 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 |
|--------------------------|---|-----------------------------|------------------------|-----------------------------|
| 17-3026                  | <b>Industrial Engineering Technologists and Technicians</b>                                 | \$23.28                     | \$31.97                | \$40.71                     |
| 51-2098<br>(for 51-2099) | <b>Miscellaneous Assemblers and Fabricators (for Assemblers and Fabricators, All Other)</b> | \$14.19                     | \$16.28                | \$19.35                     |
| 51-4041                  | <b>Machinists</b>   | \$17.12                     | \$22.16                | \$28.80                     |
| 51-4121                  | <b>Welders, Cutters, Solderers, and Brazers</b>   | \$17.11                     | \$21.56                | \$27.67                     |
| 51-4122                  | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b>              | \$16.19                     | \$20.11                | \$23.50                     |

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 in the field, 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:

|         |   |
|---------|---|
| 17-3026 | Industrial Engineering Technologists and Technicians                    |
| 51-2099 | Assemblers and Fabricators, All Other                                   |
| 51-4041 | Machinists  |
| 51-4121 | Welders, Cutters, Solderers, and Brazers                                |
| 51-4122 | Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders |

## Top Occupations

In 2021, there were 1,179 employer postings for 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 2021 |
|----------|--|------------------------------|
| 17-3026  | <b>Industrial Engineering Technologists and Technicians</b>                    | 588                          |
| 51-4041  | <b>Machinists</b>  | 342                          |
| 51-4121  | <b>Welders, Cutters, Solderers, and Brazers</b>                                | 184                          |
| 51-2099  | <b>Assemblers and Fabricators, All Other</b>                                   | 56                           |
| 51-4122  | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b> | 9                            |

Source: Labor Insight/Jobs (Burning Glass)

| SOC Code | Occupation   | Risk of Automation |
|----------|--|--------------------|
| 17-3026  | <b>Industrial Engineering Technologists and Technicians</b>                    | Low                |
| 51-4041  | <b>Machinists</b>  | High               |
| 51-4121  | <b>Welders, Cutters, Solderers, and Brazers</b>                                | High               |
| 51-2099  | <b>Assemblers and Fabricators, All Other</b>                                   | High               |
| 51-4122  | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b> | 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. Maintenance Technician is mentioned as the job title in 11% of all relevant job postings (126 postings).

**Exhibit 5 –Job Titles**

| <b>Title</b>              | <b>Job Postings,<br/>Full Year 2021</b> |
|---------------------------|---|
| Maintenance Technician    | 126                                     |
| CNC Machinist             | 70                                      |
| Welder                    | 38                                      |
| Machinist                 | 36                                      |
| Maintenance Technician II | 34                                      |

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 Express Oxnard. The top worksite cities in the region for these occupations were Santa Clarita, Oxnard, Ventura, Simi Valley, and Camarillo.

**Exhibit 6 – Top Employers (n=642)**

| <b>Employer</b>    | <b>Job Postings,<br/>Full Year 2021</b> |
|--------------------|---|
| Express Oxnard     | 22                                      |
| McDonald's         | 21                                      |
| Northrop Grumman   | 19                                      |
| Amazon             | 18                                      |
| ITT Industries Inc | 16                                      |

Source: Labor Insight/Jobs (Burning Glass)

**Skills**

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

**Exhibit 7 –Job Skills (n=936)**

| Skills                              | Job Postings, Full Year 2021 |
|-------------------------------------|------------------------------|
| Repair                              | 481                          |
| Machining                           | 357                          |
| Computer Numerical Control (CNC)    | 315                          |
| Welding                             | 247                          |
| Lathes                              | 206                          |
| Predictive/Preventative Maintenance | 187                          |
| Hand Tools                          | 145                          |

Source: Labor Insight/Jobs (Burning Glass)

**Industry Concentration**

Exhibit 8 shows the industries with the most Manufacturing and Industrial Technology postings in the South Central Coast. Note: 37% 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, 2021**

| Industry   | Occupation Group Jobs in Industry | % of Occupation Group in Industry |
|--|-----------------------------------|-----------------------------------|
| Manufacturing                                    | 290                               | 39.2%                             |
| Retail Trade                                     | 108                               | 14.6%                             |
| Construction                                     | 83                                | 11.2%                             |
| Professional, Scientific, and Technical Services | 57                                | 7.7%                              |
| Public Administration                            | 29                                | 3.9%                              |

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       |
|---------|--|-----------------------------------|-----------------------------------|
| 17-3026 | <b>Industrial Engineering Technologists and Technicians</b>                    | Associate’s degree                | None                              |
| 51-2099 | <b>Assemblers and Fabricators, All Other</b>                                   | High school diploma or equivalent | Moderate-term on-the-job training |
| 51-4041 | <b>Machinists</b>  | High school diploma or equivalent | Long-term on-the-job training     |
| 51-4121 | <b>Welders, Cutters, Solderers, and Brazers</b>                                | High school diploma or equivalent | Moderate-term on-the-job training |
| 51-4122 | <b>Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders</b> | High school diploma or equivalent | Moderate-term on-the-job training |

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

**Regional Completions and Openings**

There were 124 regional completions (2020) and 1,203 regional openings (2020) in the South Central Coast region in programs related to the occupations identified as aligned with Manufacturing and Industrial Technology.

**Exhibit 10 – Completions and Openings**

|   |   |  |
|---|---|--|
| <b>8</b><br>Regional Institutions had Related Programs (2020) | <b>124</b><br>Regional Completions (2020) | <b>1,203</b><br>Annual Openings (2020) |
|---|---|--|

Source: Economic Modeling Specialists International (EMSI)

## Related Programs

| CIP Code | Program   | Completions (2020) |
|----------|---|--------------------|
| 48.0508  | Welding Technology/Welder                                       | 81                 |
| 47.0105  | Industrial Electronics Technology/Technician                    | 33                 |
| 48.0503  | Machine Shop Technology/Assistant                               | 5                  |
| 15.0000  | Engineering Technologies/Technicians, General                   | 3                  |
| 15.9999  | Engineering/Engineering-Related Technologies/Technicians, Other | 1                  |
| 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 the Manufacturing and Industrial Technology Program (TOP: 0956.00) in the South Central Coast region for the 2018-19 academic year.

- Completers of Manufacturing and Industrial Technology programs from the 2018-2019 academic year in the South Central Coast region had a **median annual wage upon completion of \$38,570.**
- 50% of students are **employed within a year** after completing a program.
- 54% of students **attained a living wage** within a year of completion.
- Completers experienced an average of **+34% change in earnings after exiting.**
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## **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.