Industrial Automation Technology (TOP 0934.00)

June 2024

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 – Industrial Automation 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 that align with these occupations:

- Electronics Engineers, Except Computer (SOC 17-2072)
- Industrial Engineers (SOC 17-2112)
- Electrical and Electronic Engineering Technologists and Technicians (SOC 17-3023)
- Electro-Mechanical and Mechatronics Technologists and Technicians (SOC 17-3024)
- Industrial Engineering Technologists and Technicians (SOC 17-3026)
- Mechanical Engineering Technologists and Technicians (SOC 17-3027)
- Industrial Machinery Mechanics (SOC 49-9041)

Key Findings

- In 2022, there were 5,519 jobs for the seven occupations of interest in the South Central Coast Region.
- This number is expected to increase by 3% through 2027.
- Projections show approximately 511 annual openings in the region. There were 145 awards conferred in relevant programs, indicating an undersupply.
- According to the Bureau of Labor Statistics, a bachelor's degree is typically required for *Electronics Engineers (Except Computer)* and *Industrial Engineers*. An associate degree is typically required for *Electrical and Electronic Engineering Technologists and Technicians; Electro-Mechanical and Mechatronics Technologists and Technicians; Industrial Engineering Technologists and Technicians;* and *Mechanical Engineering Technologists and Technicians*.

[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 seven occupations in the standard occupational classification (SOC) system that were identified 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
17-2072	Electronics Engineers, Except Computer	Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.	Compatibility Test Engineer, Design Engineer, Electronics Design Engineer, Engineer, Evaluation Engineer, Integrated Circuit Design Engineer (IC Design Engineer), Product Engineer, Radio Frequency Engineer (RF Engineer), Research and Development Engineer (R and D Engineer), Test Engineer
17-2112	Industrial Engineers	Design, develop, test, and evaluate integrated systems for managing industrial production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.	Continuous Improvement Engineer, Engineer, Facilities Engineer, Industrial Engineer, Operations Engineer, Plant Engineer, Process Engineer, Project Engineer, Quality Engineer, Research and Development Engineer (R and D Engineer)
17-3023	Electrical and Electronic Engineering Technologists and Technicians	Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.	Communications Technologist, Electrical Engineering Technician, Electrical Technician, Electronics Engineering Technician, Electronics Technician, Engineering Technician (Engineering Tech), Engineering Technologist, System Technologist, Technologist
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	Operate, test, maintain, or adjust unmanned, automated, servomechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment to observe or record visual information at sites such as oil rigs, crop fields, buildings, or for similar infrastructure, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.	Automation Technician (Automation Tech), Electro-Mechanic, Electromechanical Assembler (EM Assembler), Electromechanical Technician (EM Technician), Electronics Technician (Electronics Tech), Mechanical Technician (Mechanical Tech), Process Control Tech, Product Test Specialist, Test Engineering Technician (Test Engineering Tech), Test Technician (Test Tech)

17-3026	Industrial Engineering Technologists and Technicians	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
17-3027	Mechanical Engineering Technologists and Technicians	Apply theory and principles of mechanical engineering to modify, develop, test, or adjust machinery and equipment under direction of engineering staff or physical scientists.	Engineering Laboratory Technician (Engineering Lab Technician), Engineering Technical Analyst, Engineering Technician (Engineering Tech), Engineering Technologist, Manufacturing Engineering Technician (Manufacturing Engineering Tech), Mechanical Designer, Mechanical Technician (Mechanical Tech), Process Engineering Technician (Process Engineering Tech), Process Technician, Research and Development Technician (R and D Tech)
49-9041	Industrial Machinery Mechanics	Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems. May also install, dismantle, or move machinery and heavy equipment according to plans.	Industrial Machinery Mechanic, Industrial Mechanic, Loom Fixer, Loom Technician, Machine Adjuster, Machine Mechanic, Maintenance Technician, Mechanic, Overhauler, Sewing Machine Mechanic

Source: O*NET Online

Current and Future Employment

In the South Central Coast region, the number of jobs for Industrial Automation Technology-related occupations is expected to increase 3% through 2027. Approximately 511 annual openings are expected through 2027.

Exhibit 2 – Five-Year Projections for Industrial Automation Technology Occupations in the South Central Coast Region

SOC	Occupation	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
17-2072	Electronics Engineers, Except Computer	1,317	1,140	(176)	(13%)	70
17-2112	Industrial Engineers	1,178	1,286	108	9%	94
17-3023	Electrical and Electronic Engineering Technologists and Technicians	1,182	1,168	(14)	(1%)	129
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	90	98	9	10%	12
17-3026	Industrial Engineering Technologists and Technicians	222	256	34	15%	30
17-3027	Mechanical Engineering Technologists and Technicians	194	203	8	4%	24
49-9041	Industrial Machinery Mechanics	1,337	1,513	175	13%	152
	TOTAL	**5,519**	**5,663**	**144**	**3%**	**511**

Source: Lightcast™ Analyst 2023

Earnings

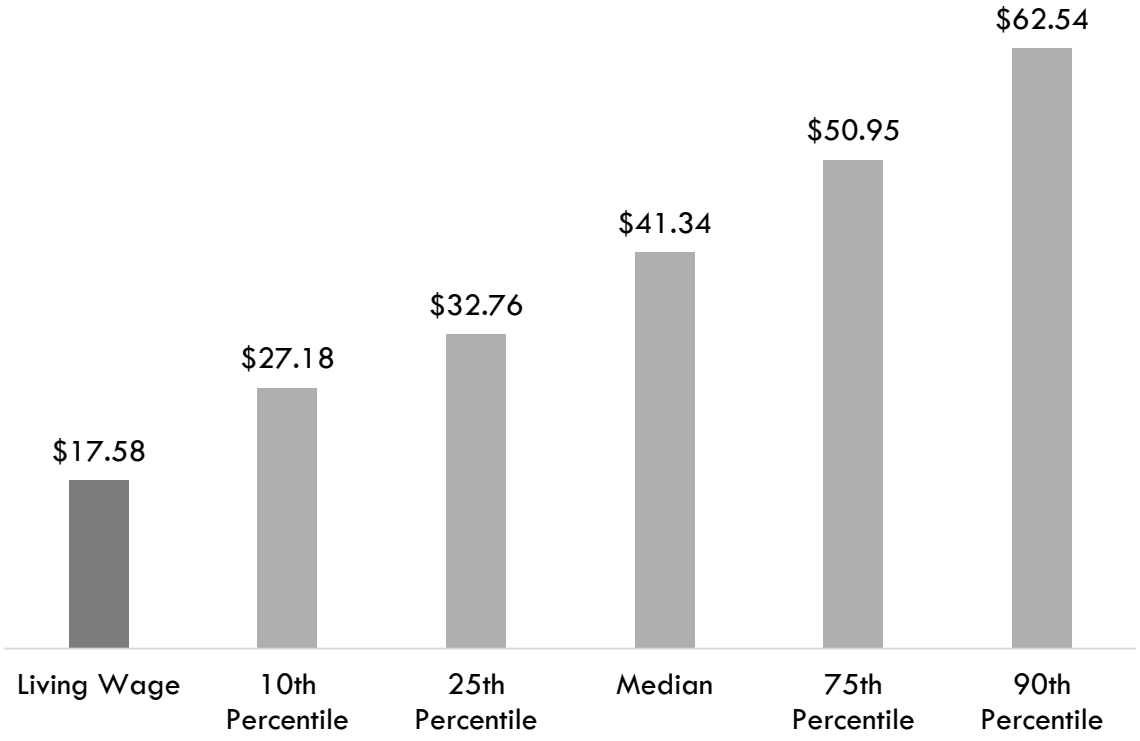
Exhibit 3 contains hourly wages for the occupations of interest. Entry-level hourly earnings are represented by the 25th percentile of wages, median hourly earnings are represented by the 50th percentile of wages, and experienced hourly earnings are represented by the 75th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for Industrial Automation Technology Occupations in the South Central Coast Region

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
17-2072	Electronics Engineers, Except Computer	$52.44	$64.41	$72.68
17-2112	Industrial Engineers	$41.02	$51.10	$63.99
17-3023	Electrical and Electronic Engineering Technologists and Technicians	$29.10	$39.91	$50.35
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	$28.59	$36.44	$46.41
17-3026	Industrial Engineering Technologists and Technicians	$28.14	$34.45	$46.68
17-3027	Mechanical Engineering Technologists and Technicians	$25.96	$32.74	$38.42
49-9041	Industrial Machinery Mechanics	$24.04	$30.31	$38.11

Source: Lightcast™ Analyst 2023

Exhibit 3b – Earnings for Industrial Automation Technology Occupations in the South Central Coast Region



Source: Family Needs Calculator (Living wage is based on Single Adult households with no children); Lightcast™ Analyst

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 the occupations relevant to the field of study. Employer job postings are consulted to understand who is looking for professionals in a given field, and what they are looking for in potential candidates. To identify relevant job postings, the following occupations were used:

17-2072	Electronics Engineers, Except Computer
17-2112	Industrial Engineers
17-3023	Electrical and Electronic Engineering Technologists and Technicians
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians
17-3026	Industrial Engineering Technologists and Technicians
17-3027	Mechanical Engineering Technologists and Technicians
49-9041	Industrial Machinery Mechanics

Top Occupations

Over the past 12 months (June 2023 to May 2024), there have been 3,050 employer job postings for Industrial Automation Technology occupations.

Exhibit 4 – Job Postings by Occupation

SOC Code	Occupation	Job Postings, Last 12 months
17-2112	Industrial Engineers	1,289
17-3026	Industrial Engineering Technologists and Technicians	772
17-2072	Electronics Engineers, Except Computer	418
17-3023	Electrical and Electronic Engineering Technologists and Technicians	231
49-9041	Industrial Machinery Mechanics	196
17-3027	Mechanical Engineering Technologists and Technicians	85
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	59
	Total	**3,050**

Source: Lightcast™ Analyst 2023

Top Titles

The top job titles for employers posting ads for Industrial Automation Technology occupations are listed in Exhibit 5.

Exhibit 5 – Job Titles

Title	Job Postings, Last 12 months
Manufacturing Engineers	316
Manufacturing Technicians	302
Quality Engineers	184
Supplier Quality Engineers	146
Production Technicians	145
Industrial Engineers	127
Engineering Technicians	123
Validation Engineers	123
Manufacturing Associates	120
Design Engineers	119
Electronic Systems Engineers	119
Test Engineers	118
Electromechanical Technicians	117
Mechanical Technicians	115
Automation Engineers	100

Source: Lightcast™ Analyst 2023

Top Employers

Exhibit 6 lists the major employers hiring professionals in the field of interest. The top employers posting job ads were Actalent, Northrop Grumman, and Skyworks.

Exhibit 6 – Top Employers

Employer	Job Postings, Last 12 months
Actalent	127
Northrop Grumman	111
Skyworks	101
Boeing	100
Amgen	100
Raytheon Technologies	98
Belcan	87
Aerovironment	85
L3Harris Technologies	81
Entegris	77
Parker Hannifin	75
Skyworks Solutions	75
Avantor	69
Aerotek	69
Redwire Space	68

Source: Lightcast™ Analyst 2023

Skills

The tables in Exhibit 7 list employers' most commonly requested skills in job postings related to Industrial Automation Technology Occupations. Manufacturing Processes is the most sought-after specialized skill for employers. Communication was the most requested baseline skill. Microsoft Excel (Office) was the most requested software and programming skill.

Exhibit 7 – Specialized Skills

Skills	Job Postings, Last 12 months
Manufacturing Processes	448
Manufacturing Engineering	254
Continuous Improvement Process	241
Lean Manufacturing	227
Auditing	220
Hand Tools	215
Tooling	214
Process Improvement	209
Project Management	206
Electrical Engineering	205

Source: Lightcast™ Analyst 2023

Exhibit 7b – Baseline Skills

Skills	Job Postings, Last 12 months
Communication	694
Operations	547
Problem Solving	452
Troubleshooting (Problem Solving)	446
Management	417
Microsoft Excel	288
Detail Oriented	285
Planning	275
Microsoft Office	243
Leadership	229

Source: Lightcast™ Analyst 2023

Exhibit 7c – Software and Programming Skills

Skills	Job Postings, Last 12 months
Microsoft Excel	288
Microsoft Office	243
Microsoft PowerPoint	191
SolidWorks (CAD)	135
Microsoft Outlook	110
SAP Applications	93
Python (Programming Language)	77
Microsoft Word	64
MATLAB	54
AutoCAD	53

Source: Lightcast™ Analyst 2023

Education and Training

Exhibit 8 shows the typical entry-level education requirement for Industrial Automation Technology Occupations along with the typical on-the-job training needed to attain competency in the occupation.

Exhibit 8 – Education and Training Requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training
17-2072	Electronics Engineers, Except Computer	Bachelor's degree	None
17-2112	Industrial Engineers	Bachelor's degree	None
17-3023	Electrical and Electronic Engineering Technologists and Technicians	Associate degree	None
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	Associate degree	None
17-3026	Industrial Engineering Technologists and Technicians	Associate degree	None
17-3027	Mechanical Engineering Technologists and Technicians	Associate degree	None
49-9041	Industrial Machinery Mechanics	High school diploma or equivalent	Long-term

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

Regional Completions and Openings

Between 2020 and 2023, there were 145 awards conferred in the South Central Coast region aligned with the programs that have historically trained for the occupations of interest.

Exhibit 9 – Three-Year Average of Awards Conferred in the Region

TOP/CIP Code	Program	3-Year Average (2020-2023)
0924.00	Engineering Technology, General (requires Trigonometry)	7
0934.00	Electronics and Electric Technology	37
0934.20	Industrial Electronics	18
0956.00	Manufacturing and Industrial Technology	21
15.0612	Industrial Technology/Technician	59
15.1307	3-D Modeling and Design Technology/Technician	3
	Average	**145**

Source: Datamart and IPEDS

CCC Awards

Exhibit 10 shows the average number of awards granted by community colleges within programs historically dedicated to training for Industrial Automation Technology Occupations.

Exhibit 10 – CCC Awards in the South Central Coast Region, 2020-2023 Average

CCC Programs	3-Year Average
Allan Hancock	4
Antelope Valley	54
Canyons	5
Cuesta	13
Moorpark	3
Ventura	3

Source: DataMart, 2023

Sources

O*Net Online, Lightcast™ Analyst 2023, 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 Industrial Automation 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.