

# Mechatronics and Industrial Automation Technician Occupations

*Inland Empire/ Desert Region (Riverside-San Bernardino-Ontario Metropolitan Statistical Area)*

## Summary

- Employment for the mechatronics and industrial automation technician occupational group is expected to increase by 4% through 2022. **Nearly 540 job openings** will be available over the five-year timeframe in the Inland Empire/ Desert Region.
- The entry-level, 10<sup>th</sup> percentile wage for each of the occupations in the mechatronics and industrial automation technician occupational group is **above the MIT Living Wage estimate of \$12.30 per hour** for a single adult living in the Inland Empire/Desert Region.
- Based on the average annual number of program completers for the selected community college program (**18 average annual community college awards**), and the annual openings for mechatronics and industrial automation technician occupations in the region (**107 annual job openings**), there appears to an opportunity for program growth.

## Job Opportunities

In 2017, there were just over 1,100 jobs in the mechatronics and industrial automation technician occupational group in the Inland Empire/Desert region. Across the region, employment related to this group is expected to increase 4% through 2022. Employers will need to hire more than 540 workers over the next five years to fill new jobs and to backfill jobs that workers are leaving –including retirements. Appendix A, Table 1 shows the projected job growth for each of the detailed occupations in this group.

*Exhibit 1: Five-year projections for the combined mechatronics and industrial automation technician occupational group in the Inland Empire/Desert Region*

Region	2017 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Inland Empire/Desert Region	1,106	4%	537	107	23%

Source: EMSI 2017.4

Mechatronics and Industrial Automation Technician occupations in the Inland Empire/Desert Region, February 2018



Over the last 12 months (January 2017 to December 2017), there were 22 advertisements (ads) for the combined jobs in the mechatronics and industrial automation technician occupational group in the Inland Empire/Desert Region. In the full-year 2016, there were 48 job ads; 61 job ads in 2015; 40 job ads in 2014; and 50 job ads in 2013. Exhibit 2 shows the number of job ads posted during the last 12 months for each of the occupations in the mechatronics and industrial automation technician occupational group.

*Exhibit 2: Job ads by each of the mechatronics and industrial automation technician occupations in the Inland Empire/Desert Region during the last 12 months, Jan 2017 – Dec 2017*

Occupation	Job Ads
Mechanical Engineering Technicians	15
Electrical and Electronics Repairers, Commercial and Industrial Equipment	4
Electro-Mechanical Technicians	3
<b>TOTAL</b>	<b>22</b>

Source: Burning Glass – Labor Insights

## Earnings

The entry-level, 10<sup>th</sup> percentile wage for each of the occupations in the mechatronics and industrial automation technician occupational group is above the MIT Living Wage estimate of \$12.10 per hour for a single adult living in the Inland Empire/Desert Region. See Exhibit 3 for wage information by occupation for the Inland Empire/Desert Region.

*Exhibit 3: Earnings for the mechatronics and industrial automation technician occupational group in the Inland Empire/Desert Region*

Occupation	Entry to Experienced Hourly Earnings Range*	Median Wage*	Avg. Annual Earnings
Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$20.76 to \$39.44	\$30.97	\$64,200
Electro-Mechanical Technicians	\$24.60 to \$46.30	\$29.73	\$69,000
Mechanical Engineering Technicians	\$14.86 to \$37.64	\$25.12	\$53,800

Source: EMSI 2017.4

\*Entry Hourly is 10th percentile wage, the median is 50th percentile wage, experienced is 90th percentile wage.

## Work Locations, Employers, Skills, and Education

According to job ads, the top worksite regional cities for jobs in this occupational group were Riverside, Rialto, and Fort Irwin. The top employers posting job ads for the mechatronics-industrial automation technicians group are Mantech International Corp., C&W Services, and Sabert Corporation. Exhibit 4 lists the top specialized, soft, and software and programming skills that employers are seeking when looking for workers to fill mechatronics and industrial automation technician positions. “N/A” indicates that no information was available from the limited job ads for that occupation.

*Exhibit 4: Top skills in highest demand for the mechatronics and industrial automation technician occupational group in the Inland Empire/Desert Region, Jan 2017 – Dec 2017*

Occupation	Specialized skills	Soft skills	Software and Programming skills
Mechanical Engineering Technicians (n=14)	<ul style="list-style-type: none"> <li>Repair</li> <li>Wiring</li> <li>Packaging</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Preventive Maintenance</li> <li>Mathematics</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft Office</li> <li>WonderWare</li> </ul>
Electrical and Electronics Repairers, Commercial and Industrial Equipment (n=3)	<ul style="list-style-type: none"> <li>Equipment Repair</li> <li>Inspection</li> <li>Equipment Assembly</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Physical Demand</li> <li>Quality Assurance and Control</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Electro-Mechanical Technicians (n=3)	<ul style="list-style-type: none"> <li>Machinery</li> <li>Welding</li> <li>Repair</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Communication Skills</li> <li>Computer Skills</li> <li>Problem Solving</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Source: Burning Glass – Labor Insights

Exhibit 5 displays the entry-level education level education typically required to enter this occupation according to the Bureau of Labor Statistics (BLS). This chart also displays educational attainment for incumbent workers with “some college, no degree” and an “associate degree” according to the U.S. Census (2015-16) and the minimum advertised education requirement requested by employers in online job ads. All employers looking for workers in this occupational group requested a high school diploma or vocational training. The low job posting results for this

occupational group should be used with caution since they may not be representative of all employers hiring these occupations.

*Exhibit 5: Educational attainment and online job ads with minimum advertised education requirements for the mechatronics and industrial automation technician occupational group in the Inland Empire/Desert Region, Jan 2017 – Dec 2017*

Occupations	Typical Entry-Level Education Requirement	Educational Attainment (Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework)	Minimum Advertised Education Requirement from Job Ads		
			High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Mechanical Engineering Technicians	Associate degree	54%	100% (n=12)	-	-
Electrical and Electronics Repairers, Commercial and Industrial Equipment	Postsecondary nondegree award	52%	100% (n=1)	-	-
Electro-Mechanical Technicians	Associate degree	54%	100% (n=3)	-	-

Source: EMSI 2017.4, Current Population Survey, Burning Glass – Labor Insights

## Industry

Exhibit 6 displays the industries that employ the most mechatronics and industrial automation technician occupations in the two-county region. Staffing patterns show the industries that employ the most workers of a specific occupation. “N/A” indicates that no information was available from the limited job ads for that occupation.

*Exhibit 6: Top industries employing each mechatronics and industrial automation technician occupation in the Inland Empire/Desert Region, Jan 2017 – Dec 2017*

Occupation	Staffing Pattern, Percent of Occupation in Industry (NAICS)	Top Industries Job Ads (NAICS)
Mechanical Engineering Technicians	<ul style="list-style-type: none"> <li>• Manufacturing 51%</li> <li>• Professional, Scientific, And Technical Services 22.1%</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Electrical and Electronics Repairers, Commercial and Industrial Equipment	<ul style="list-style-type: none"> <li>• Manufacturing 26.1%</li> <li>• Government 22.6%</li> <li>• Wholesale Trade 14.1%</li> <li>• Construction 11.6%</li> </ul>	<ul style="list-style-type: none"> <li>• National Security and International Affairs (9281) (n=3)</li> </ul>
Electro-Mechanical Technicians	<ul style="list-style-type: none"> <li>• Manufacturing 51%</li> <li>• Professional, Scientific, And Technical Services 12.5%</li> <li>• Wholesale Trade 10%</li> </ul>	<ul style="list-style-type: none"> <li>• Automotive Parts, Accessories, and Tire Stores (4413) (n=3)</li> </ul>

Source: EMSI 2017.4, Burning Glass – Labor Insights

### Student Completions

Exhibit 7 shows the annual average regional community college awards (associate degrees and certificates) conferred during the three academic years between 2014 and 2017, with the relevant TOP code. Please note, an award is not equivalent to a single person in search of a job opening since a student may earn more than one award, such as an associate degree in addition to a certificate. Community College student outcome information is from the CTE LaunchBoard based on the selected TOP code(s) and region.

*Exhibit 7: Annual average community college student completions for the manufacturing and industrial technology program in the Inland Empire/Desert Region*

<b>0956.00 – Manufacturing and Industrial Technology</b>	<b>Annual Community College Headcount (2015-16)</b>	<b>Community College Annual Average Awards (2014-17)</b>
<b>Mt. San Jacinto</b>	49	
<b>Norco College</b>	104	
Associate degree		2
Certificate 18 to < 30 semester units		10
Certificate 6 to < 18 semester units		3
<b>San Bernardino</b>	12	
Certificate 30 to < 60 semester units		2
<b>Total CC Headcount (2015-16)</b>	<b>164</b>	
<b>Total annual average community college awards</b>		<b>18</b>

Source: LaunchBoard, IPEDS

**0956.00 – Manufacturing and Industrial Technology program Strong Workforce outcomes in the Inland Empire/Desert Region in the academic year 2015-16:**

- Number of course enrollments: 209 (California median: 298)
- Number of students who transferred to a 4-year institution: 0 (CA: 2) [2014-15]
- Employed in the second fiscal quarter after exit: 88% (CA: 75%) [2014-15]
- Median earnings in the second fiscal quarter after exit: \$11,345 (CA: \$8,971) [2014-15]
- Employed in the fourth fiscal quarter after exit: 82% (CA: 74%) [2014-15]
- Percentage in job closely related to field of study: N/A (CA: 75%) [2014-15]
- Median change in earnings: 94% (CA: 61%) [2014-15]
- Proportion of students who attained a living wage: 77% (CA: 57%) [2014-15]

**Sources**

Economic Modeling Specialists International (EMSI)  
 Labor Insight/Jobs (Burning Glass)  
 CTE LaunchBoard  
 California Community Colleges Chancellor’s Office Management Information Systems (MIS)  
 O\*Net Online  
 MIT Living Wage Calculator  
 Center of Excellence TOP to SOC Crosswalk

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## Appendix A: Occupation definitions, five-year projections, and earnings for mechatronics and industrial automation technician occupations

### **Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment**

#### **Electro-Mechanical Technicians (17-3024)**

Operate, test, maintain, or calibrate unmanned, automated, servo-mechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment at worksites, such as oil rigs, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.

*Sample job titles: Electro-Mechanic, Electro-Mechanical Technician (E/M Technician), Electronic Technician, Engineering Technician, Laboratory Technician (Lab Technician), Maintenance Technician, Mechanical Technician, Product Test Specialist, Test Technician, Tester*

Entry-Level Educational Requirement: Associate degree

Training Requirement: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 54%

#### **Mechanical Engineering Technicians (17-3027)**

Apply theory and principles of mechanical engineering to modify, develop, test, or calibrate machinery and equipment under direction of engineering staff or physical scientists.

*Sample job titles: Design Engineer, Designer, Engineering Lab Technician, Engineering Technical Analyst, Engineering Technician, Equipment Engineer, Lab Technician, Mechanical Designer, Process Technician, Research and Development Technician*

Entry-Level Educational Requirement: Associate degree

Training Requirement: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 54%

**Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)**

Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.

*Sample job titles: Control Technician, Electrical and Instrument Mechanic, Electrical and Instrument Technician (E&I Tech), Electrical Maintenance Technician, Electrical Technician, I&C Tech (Instrument and Control Technician), Instrument and Electrical Technician (I&E Tech), Repair Technician, Service Technician, Technical Support Specialist*

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: More than twelve months on-the-job training

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 52%

*Table 1. 2017 to 2022 job growth for the mechatronics and industrial automation technician occupational group, Inland Empire/Desert Region*

Occupation (SOC)	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)	655	693	38	6%	328	66
Electro-Mechanical Technicians (17-3024)	322	321	(1)	(0%)	140	28
Mechanical Engineering Technicians (17-3027)	128	141	13	10%	69	14
<b>Total</b>	<b>1,106</b>	<b>1,155</b>	<b>49</b>	<b>4%</b>	<b>537</b>	<b>107</b>

Source: EMSI 2017.4