

# Automation Technology Occupations Labor Market Information Report Solano College

Prepared by the San Francisco Bay Center of Excellence  
for Labor Market Research  
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## Recommendation

Based on all available data, there appears to be an undersupply of Automation Technology workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano and Sonoma Counties). The gap is about 1,512 students annually in the Bay region and 192 students annually in the North Bay sub-region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0956.00 - Manufacturing and Industrial Technology in the state and region. It is recommended that this data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Solano College and in the region.

## Introduction

This report profiles Automation Technology Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Solano College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Robotics Technicians (17-3024.01) or for Electronics Engineering Technicians (17-3023.01), therefore the data shown in Tables 1 and 2 is for Electro-Mechanical Technicians (SOC 17-3024) and Electrical and Electronics Engineering Technicians (SOC 17-3023) and likely overstates demand for Robotics Technicians and Electronics Engineering Technicians. Tables 3, 4, 6, 9, 10 and 11 uses job postings data from Burning Glass at the eight-digit SOC Code level for Robotics Technicians and Electronics Engineering Technicians.

- **Electro-Mechanical Technicians (SOC 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.  
*Entry-Level Educational Requirement: Associate's degree*  
*Training Requirement: None*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 54%*
- **Electrical and Electronics Engineering Technicians (SOC 17-3023):** Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions. Excludes "Broadcast Technicians" (27-4012).  
*Entry-Level Educational Requirement: Associate's degree*  
*Training Requirement: None*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 54%*

- Industrial Machinery Mechanics (SOC 49-9041):** Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems. Excludes "Millwrights" (49-9044), "Mobile Heavy Equipment Mechanics, Except Engines" (49-3042), and "Maintenance Workers, Machinery" (49-9043).  
*Entry-Level Educational Requirement: High school diploma or equivalent*  
*Training Requirement: Long-term on-the-job training*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 41%*

## Occupational Demand

**Table 1. Employment Outlook for Automation Technology Occupations in Bay Region**

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Annual Openings	10% Hourly Wage	Median Hourly Wage
Electro-Mechanical Technicians	1,233	1,224	(9)	(1%)	555	111	\$17.30	\$26.78
Electrical and Electronics Engineering Technicians	9,585	9,683	98	1%	4,326	865	\$18.14	\$30.25
Industrial Machinery Mechanics	5,008	5,538	530	11%	2,759	552	\$19.03	\$31.24
<b>Total</b>	<b>15,825</b>	<b>16,445</b>	<b>619</b>	<b>4%</b>	<b>7,639</b>	<b>1,528</b>	<b>\$18.35</b>	<b>\$30.29</b>

Source: EMSI 2018.4

**Bay Region** includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

**Table 2. Employment Outlook for Automation Technology Occupations in North Bay Sub-Region**

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Annual Openings	10% Hourly Wage	Median Hourly Wage
Electro-Mechanical Technicians	125	123	(3)	(2%)	54	11	\$17.90	\$30.43
Electrical and Electronics Engineering Technicians	435	437	2	0%	193	39	\$19.39	\$32.69
Industrial Machinery Mechanics	1,257	1,410	154	12%	715	143	\$17.92	\$29.58
<b>TOTAL</b>	<b>1,817</b>	<b>1,970</b>	<b>153</b>	<b>8%</b>	<b>962</b>	<b>192</b>	<b>\$18.27</b>	<b>\$30.38</b>

Source: EMSI 2018.4

**North Bay Sub-Region** includes Marin, Napa, Solano and Sonoma Counties

## Job Postings in Bay Region and North Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Nov 2017 - Oct 2018)**

Occupation	Bay Region	North Bay
Electronics Engineering Technicians (17-3023.01)	1,230	98
Industrial Machinery Mechanics (49-9041.00)	823	32
Electro-Mechanical Technicians (17-3024.00)	434	25
Electrical Engineering Technicians (17-3023.03)	64	
<b>Total</b>	<b>2,551</b>	<b>155</b>

Source: Burning Glass

**Table 4. Top Job Titles for Automation Technology Occupations for latest 12 months (Nov 2017 - Oct 2018)**

Common Title	Bay	North Bay	Common Title	Bay	North Bay
Mechanic	331	32	Calibration Technician	58	3
Maintenance Mechanic	319	59	Low Voltage Technician	50	1
Electronics Technician	304	11	Electromechanical Technician	43	1
Test Technician	285	1	Electro-Mechanical Assembler	36	
Electrical Technician	181	2	Mechanical Technician	36	1
Instrumentation Technician	123	16	Cable Technician	31	1

Automation Technology Occupations in 12 County Bay Region and in North Bay Sub-Region, 2018

Engineering Technician	71	3	Maintenance Technician	30	3
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Source: Burning Glass

## Industry Concentration

**Table 5. Industries hiring Automation Technology Workers in Bay Region**

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2017)	Jobs in Industry (2022)	% Change (2017-22)	% in Industry (2017)
Semiconductor and Related Device Manufacturing (334413)	2,192	2,182	(7%)	13.7%
Electronic Computer Manufacturing (334111)	1,312	1,323	5%	8.3%
Engineering Services (541330)	723	728	10%	4.6%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (811310)	506	501	5%	3.1%
Other Electronic Component Manufacturing (334419)	456	453	(21%)	2.8%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715)	423	433	(4%)	2.7%
Custom Computer Programming Services (541511)	384	389	14%	2.4%
Printed Circuit Assembly (Electronic Assembly) Manufacturing (334418)	353	377	20%	2.4%
Local Government, Excluding Education and Hospitals (903999)	330	333	6%	2.1%
Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals (334515)	290	301	(9%)	1.9%
Bare Printed Circuit Board Manufacturing (334412)	295	298	(25%)	1.9%
Wineries (312130)	283	289	13%	1.8%
Pharmaceutical Preparation Manufacturing (325412)	272	273	12%	1.7%
Computer Systems Design Services (541512)	258	255	10%	1.6%
Natural Gas Distribution (221210)	255	249	(2%)	1.6%

Source: EMSI 2018.4

**Table 6. Top Employers Posting Automation Technology Occupations in Bay and North Bay Sub-Region (Nov 2017 - Oct 2018)**

Employer	Bay	Employer	Bay	Employer	North Bay
Jones Lang Lasalle Incorporated	40	Bowlmor Amf	14	Biomarin Pharmaceutical Incorporated	10
Outsource	38	Facebook	12	Coca-Cola Enterprises Inc.	6
Tesla Motors	35	Sunstate Equipment Company	12	Abbott Laboratories	5
United Parcel Service Incorporated	27	Apple Inc.	11	Frank Lin Distillers	5
Department of Veterans Affairs	26	Embedded Resource Group	11	Valero Energy	4
Amazon	22	Lawrence Livermore National Laboratory	11	All Star Rents	3
Ricoh Electronics	19	Sanmina Corporation	11	Gym Mark, Inc	3
Sunbelt Rentals Incorporated	17	Workers Com	11	Six Flags Incorporated	3
Tekberry	17	AT&T	10	Air Technology West	2
Thermo Fisher Scientific Inc	16			Ball Corporation	2

Source: Burning Glass

## Educational Supply

There are seven community colleges with headcount on TOP 0956.00 - Manufacturing and Industrial Technology in the Bay Region, but only two colleges are issuing awards, an average of 16 awards annually. There are no colleges issuing awards in the North Bay sub-region.

**Table 7. Awards on TOP 0956.00 - Manufacturing and Industrial Technology in the Bay Area**

College	Sub-Region	Headcount	Associates	Certificates	Total
<b>Chabot College</b>	East Bay	433			
<b>DeAnza</b>	Silicon Valley	336	4	11	15
<b>Diablo Valley</b>	East Bay	43			
<b>San Francisco</b>	Mid-Peninsula	n/a		1	1
<b>San Jose City</b>	Silicon Valley	96			
<b>Santa Rosa</b>	North Bay	246			
<b>Solano</b>	North Bay	57			
<b>Total Bay Region</b>		<b>1,211</b>	<b>4</b>	<b>12</b>	<b>16</b>
<b>Total North Bay Sub-Region</b>		<b>303</b>	<b>-</b>	<b>-</b>	<b>-</b>

Source: IPEDS, Data Mart and Launchboard

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

## Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,528 annual openings for the Automation Technology occupational cluster and 16 annual awards for an annual undersupply of 1,512 students. In the North Bay sub-region, there is also a gap with 192 annual openings and no annual awards for an annual undersupply of 192 students.

## Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0956.00 - Manufacturing and Industrial Technology**

2015-16	Bay (All CTE Programs)	Solano College (All CTE Programs)	State (TOP 0956.00)	Bay (TOP 0956.00)	North Bay (TOP 0956.00)	Solano College (TOP 0956.00)
% Employed Four Quarters After Exit	75%	71%	77%	78%	79%	92%
Median Quarterly Earnings Two Quarters After Exit	\$13,996	\$7,671	\$9,658	\$11,088	\$8,498	\$10,241
Median % Change in Earnings	40%	57%	60%	60%	49%	n/a
% of Students Earning a Living Wage	63%	49%	67%	75%	64%	n/a

Source: Launchboard Pipeline (version available on 11/15/18)

## Skills, Certifications and Education

**Table 9. Top Skills for Automation Technology Occupations in Bay Region (Nov 2017 - Oct 2018)**

Skill	Postings	Skill	Postings	Skill	Postings
Repair	1,466	Calibration	281	Power Supplies	138
Schematic Diagrams	506	Electronics Industry Knowledge	269	Forklift Operation	137
Test Equipment	444	Power Tools	240	Microscope	135
Hand Tools	415	Scheduling	205	Packaging	129

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Soldering	362	Plumbing	187	Wiring Diagrams	121
Predictive / Preventative Maintenance	357	Quality Assurance and Control	176	Technical Support	108
Wiring	348	Lifting Ability	161	Electrical Work	107
Welding	309	HVAC	158	Electrical Diagrams / Schematics	105
Oscilloscopes	291	Customer Service	144	Electronic Circuits	99
Machinery	288	Electrical Systems	140	Telecommunications	99

Source: Burning Glass

**Table 10. Certifications for Automation Technology Occupations in the Bay Region (Nov 2017 - Oct 2018)**

Note: 76% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

Certification	Postings	Certification	Postings
Driver's License	412	Air Brake Certified	13
Security Clearance	47	Basic Life Saving (BLS)	8
Forklift Operator Certification	26	Leadership In Energy And Environmental Design (LEED) Certified	6
Automotive Service Excellence (ASE) Certification	23	Certified A+ Technician	5
Electrician Certification	23	Department of Transportation (DOT) Medical Certification	5
Cdl Class C	19	OSHA Safety 10 Hour	5
Welding Certification	19	Personal Fitness Trainer Certification	5
CDL Class A	15	Plumbing License	5
IPC Certification	15	American Society For Quality (ASQ) Certification	4
Basic Cardiac Life Support Certification	14	Certified Cardiographic Technician	4
Cdl Class B	14	Electric Vehicle Technician (EVT)	4

Source: Burning Glass

**Table 11. Education Requirements for Automation Technology Occupations in Bay Region**

Note: 50% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

Education (minimum advertised)	Latest 12 Mos. Postings
High school or vocational training	705 (55%)
Associate Degree	345 (27%)
Bachelor's Degree or Higher	229 (18%)

Source: Burning Glass

## Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCCO Data Mart.

## Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

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## Contacts

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