

Industrial Automation

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Submitter's Information

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**Title** Professor

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**Extension** n/a

**Region** Central/Mother Lode

**College** Bakersfield College

**CTE Dean** Cindy Collier

**CTE Dean Email** [ccollier@bakersfieldcollege.edu \(mailto:ccollier@bakersfieldcollege.edu\)](mailto:ccollier@bakersfieldcollege.edu)

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Program Information

**Program Name** Industrial Automation

**Projected Start Date** 2018-05-01

**Program Type(s)** Associate of Science Degree

**Certificate Required Units** n/a

**Units of Major Degree** 28

**Total Units for Degree** 61

**TOPs Code** Electro-Mechanical Technology (093500)

**Program Goals** The Associate of Science in Industrial Automation program provides the necessary foundation for a career in the technical fields connected with today's technology. The objectives of this program are to provide students with the necessary educational base to secure employment after obtaining the AS degree, to meet the educational requirement for individuals pursuing professional certification in automation, and to provide a pathway into a discipline-related Baccalaureate degree program.

**Program Description** The Associate of Science in Industrial Automation is designed to prepare students for optimal success in higher education and technical careers in an environment that will encourage a lifelong pursuit of learning. This degree teaches essential skills that can be put to use as an industrial technician, electronics technician, field service representative, or salesperson. A degree holder will also be considered for potential promotions into supervision and management positions. They will also become valuable additions to technology-focused employers. Teaching and learning strategies will include student-

# Occupation Overview

Emsi Q3 2017 Data Set

October 2017

**Bakersfield College**



1801 Panorama Drive  
Bakersfield, California 93305  
661.395.4921

# Parameters

## Occupations

12 items selected. See Appendix A for details.

## Regions

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Code	Description
12540	Bakersfield, CA

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## Timeframe

2014 - 2023

## Datarun

2017.3 – Employees

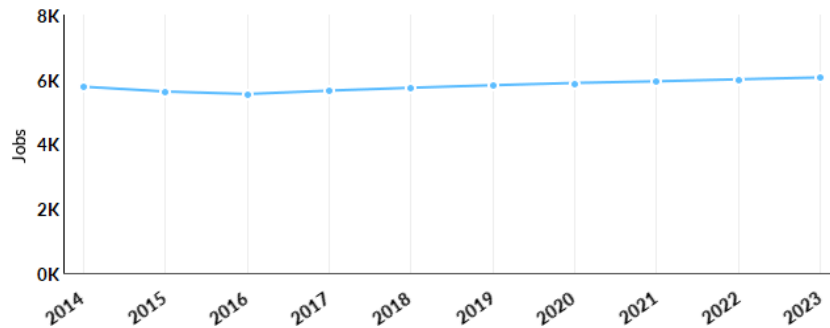
## 12 Occupations in Bakersfield Area

# Occupation Summary for 12 Occupations

<b>5,543</b> Jobs (2016) 4% above National average	<b>5.0%</b> % Change (2014-2023) Nation: 11.8%	<b>\$24.37/hr</b> Median Hourly Earnings Nation: \$20.35/hr
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## Growth

<b>5,769</b> 2014 Jobs	<b>6,055</b> 2023 Jobs	<b>286</b> Change (2014-2023)	<b>5.0%</b> % Change (2014-2023)
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Occupation	2014 Jobs	2023 Jobs	Change	% Change
Electrical and Electronics Engineering Technicians (17-3023)	728	705	-23	-3%
Electro-Mechanical Technicians (17-3024)	49	39	-10	-20%
Sales Engineers (41-9031)	118	108	-10	-8%
Electric Motor, Power Tool, and Related Repairers (49-2092)	39	31	-8	-21%
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)	176	172	-4	-2%
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	24	19	-5	-21%
Control and Valve Installers and Repairers, Except Mechanical Door (49-9012)	76	62	-14	-18%
Industrial Machinery Mechanics (49-9041)	1,106	1,143	37	3%
Maintenance Workers, Machinery (49-9043)	253	265	12	5%
Precision Instrument and Equipment Repairers, All Other (49-9069)	11	11	0	0%
Maintenance and Repair	2,853	3,145	292	10%

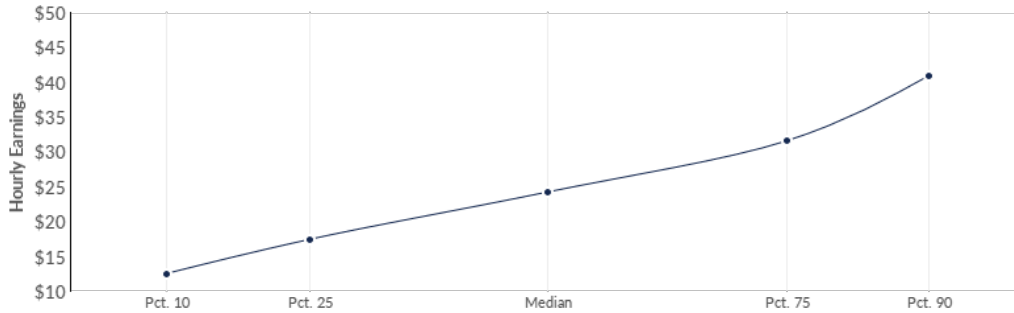
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<b>Occupation</b>	<b>2014 Jobs</b>	<b>2023 Jobs</b>	<b>Change</b>	<b>% Change</b>
<hr/>				
Workers, General (49-9071)				
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Installation, Maintenance, and Repair Workers, All Other (49-9099)	336	354	18	5%

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## Percentile Earnings

<b>\$17.44/hr</b> 25th Percentile Earnings	<b>\$24.25/hr</b> Median Earnings	<b>\$31.57/hr</b> 75th Percentile Earnings
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Electrical and Electronics Engineering Technicians (17-3023)	\$31.96	\$38.52	\$46.90
Electro-Mechanical Technicians (17-3024)	\$28.37	\$33.97	\$40.50
Sales Engineers (41-9031)	\$35.75	\$53.03	\$70.04
Electric Motor, Power Tool, and Related Repairers (49-2092)	\$19.94	\$25.54	\$36.29
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)	\$27.12	\$31.38	\$34.35
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	\$37.84	\$44.10	\$50.70
Control and Valve Installers and Repairers, Except Mechanical Door (49-9012)	\$15.16	\$33.67	\$42.65
Industrial Machinery Mechanics (49-9041)	\$23.67	\$29.01	\$35.93
Maintenance Workers, Machinery (49-9043)	\$19.12	\$23.46	\$28.04
Precision Instrument and Equipment Repairers, All Other (49-9069)	\$27.19	\$33.64	\$41.20
Maintenance and Repair Workers, General (49-9071)	\$14.89	\$19.66	\$25.89
Installation, Maintenance, and Repair Workers, All Other (49-	\$13.35	\$16.31	\$20.40

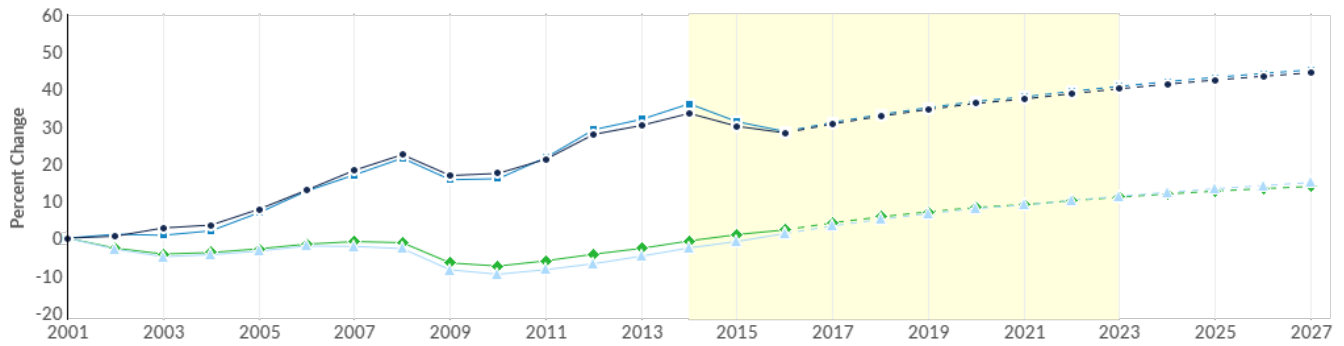


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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
9099)			

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## Regional Trends



	Region	2014 Jobs	2023 Jobs	Change	% Change
●	Region	5,769	6,055	286	5.0%
●	BC Service Area DEMOGRAPHIC	4,093	4,235	142	3.5%
●	California	235,728	269,292	33,564	14.2%
●	United States	2,363,848	2,643,450	279,602	11.8%

# Regional Breakdown

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County	2023 Jobs
Kern County, CA	6,055

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## Job Postings Summary

<p style="text-align: center;"><b>9,718</b> Unique Postings (Jan 2014 - Sep 2017)</p> <p style="text-align: center;">45,732 Total Postings</p>	<p style="text-align: center;"><b>5 : 1</b> Posting Intensity (Jan 2014 - Sep 2017)</p> <p style="text-align: center;">Regional Average: 6 : 1</p> 
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There were **45,732** total job postings for your selection from January 2014 to September 2017, of which **9,718** were unique. These numbers give us a Posting Intensity of **5-to-1**, meaning that for every 5 postings there is 1 unique job posting. This is lower than the Posting Intensity for all other occupations and companies in the region (6-to-1), indicating that they may not be trying as hard to hire for this position.

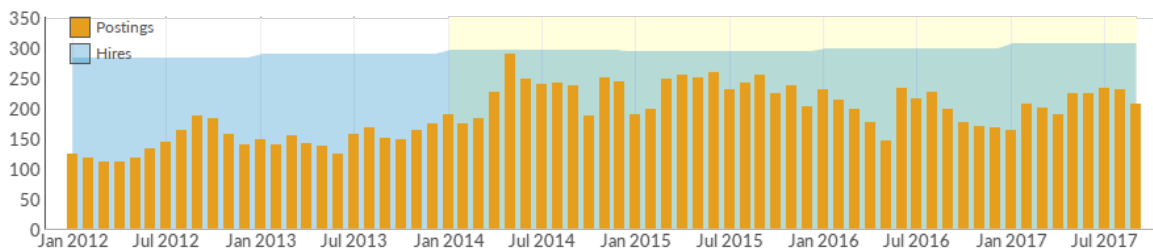
## Job Postings vs. Hires

**216**

Avg. Monthly Postings (Jan 2014 - Sep 2017)

**297**

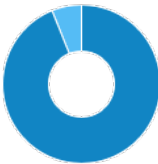
Avg. Monthly Hires (Jan 2014 - Sep 2017)



Occupation	Avg Monthly Postings (Jan 2014 - Sep 2017)	Avg Monthly Hires (Jan 2014 - Sep 2017)
Maintenance and Repair Workers, General	126	177
Electrical and Electronics Engineering Technicians	47	23
Industrial Machinery Mechanics	24	47
Sales Engineers	7	3
Installation, Maintenance, and Repair Workers, All Other	4	17
Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	6
Electro-Mechanical Technicians	2	1
Maintenance Workers, Machinery	1	19
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	1	1
Control and Valve Installers and Repairers, Except Mechanical Door	0	2
Precision Instrument and Equipment Repairers, All Other	0	0
Electric Motor, Power Tool, and Related Repairers	0	1

# Occupation Gender Breakdown

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	Gender	2016 Jobs	2016 Percent
•	Males	5,204	93.9% 
•	Females	338	6.1% 

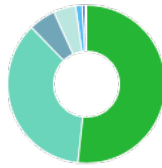
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# Occupation Age Breakdown



	Age	2016 Jobs	2016 Percent
●	14-18	16	0.3%
●	19-24	322	5.8% ■
●	25-34	1,020	18.4% ■■
●	35-44	1,170	21.1% ■■■
●	45-54	1,508	27.2% ■■■■
●	55-64	1,172	21.1% ■■■
●	65+	335	6.0% ■■

## Occupation Race/Ethnicity Breakdown



	Race/Ethnicity	2016 Jobs	2016 Percent	
●	White	2,868	51.8%	<div style="width: 51.8%;"></div>
●	Hispanic or Latino	1,992	35.9%	<div style="width: 35.9%;"></div>
●	Asian	306	5.5%	<div style="width: 5.5%;"></div>
●	Black or African American	253	4.6%	<div style="width: 4.6%;"></div>
●	Two or More Races	74	1.3%	<div style="width: 1.3%;"></div>
●	American Indian or Alaska Native	34	0.6%	<div style="width: 0.6%;"></div>
●	Native Hawaiian or Other Pacific Islander	17	0.3%	<div style="width: 0.3%;"></div>



## Occupational Programs

<b>8</b> Programs (2016)		<b>121</b> Completions (2016)	<b>584</b> Openings (2016)
CIP Code	Program	Completions (2016)	
47.0101	Electrical/Electronics Equipment Installation and Repair, General	67	
15.9999	Engineering Technologies and Engineering-Related Fields, Other	35	
47.0104	Computer Installation and Repair Technology/Technician	11	
46.0302	Electrician	8	
15.0000	Engineering Technology, General	0	

## Industries Employing 12 Occupations

Industry	Occupation Group Jobs in Industry (2016)	% of Occupation Group in Industry (2016)	% of Total Jobs in Industry (2016)
Local Government, Excluding Education and Hospitals	468	8.4%	3.5%
Federal Government, Civilian, Excluding Postal Service	323	5.8%	3.5%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	212	3.8%	26.5%
Crop Production	176	3.2%	1.0%
Elementary and Secondary Schools (Local Government)	164	3.0%	0.7%

# Appendix A - Occupations

Code	Description
17-3023	Electrical and Electronics Engineering Technicians
17-3024	Electro-Mechanical Technicians
41-9031	Sales Engineers
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door
49-2092	Electric Motor, Power Tool, and Related Repairers
49-9041	Industrial Machinery Mechanics
49-9043	Maintenance Workers, Machinery
49-9069	Precision Instrument and Equipment Repairers, All Other
49-9071	Maintenance and Repair Workers, General
49-9099	Installation, Maintenance, and Repair Workers, All Other

# Appendix B - Data Sources and Calculations

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

## CareerBuilder/Emsi Job Postings

Job postings are collected from various sources and processed/enriched by Careerbuilder to provide information such as standardized company name, occupation, skills, and geography. Emsi performs additional filtering and processing to improve compatibility with Emsi data.

## Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department

centered, competency-based, and hands-on instruction. In addition, the program will set in place quality customer/technician and employer/employee relationship skills to assure workplace and educational competencies have been met.

**Program Requirements**

In addition to the required general education pattern, students must complete the core courses listed below for the Associate of Science in Industrial Automation Degree. Students must also obtain a minimum grade point average of 2.0 with a grade of C or higher in all courses required for the major. A "P" (Pass) grade is not an acceptable grade for courses in this major.

Required Core Classes:

- ELET B1 Basic Electronics (DC and AC) 4
- ELET B4 Computer Integrated Manufacturing 3
- ELET B5 Programmable Logic Controllers 3
- ELET B55a Electric Motors-Controls 3
- ELET B56 Instrumentation and Process Control 3
- ELET B58 Advanced Programmable Logic Controllers 3
- ELET B61 Telecommunications 3
- INDR B12 Introduction to Drafting & CAD 2
- STDV B1 Student Development 1

Electives

- ELET B70, MFGT B1AB, WELD B1A, WELD B1B, AUTO B20 3

Total Required Units in area of Major 28

Item 3. Program Requirements and Course Sequence

Requirements:

In addition to the required general education pattern, students must complete the core courses listed below for the Associate of Science in Industrial Automation Degree. Students must also obtain a minimum grade point average of 2.0 with a grade of C or higher in all courses required for the major. A "P" (Pass) grade is not an acceptable grade for courses in this major.

Required Core Classes:

- ELET B1 Basic Electronics (DC and AC) 4
- ELET B4 Computer Integrated Manufacturing 3
- ELET B5 Programmable Logic Controllers 3
- ELET B55a Electric Motors-Controls 3 (course revision pending)
- ELET B56 Instrumentation and Process Control 3
- ELET B58 Advanced Programmable Logic Controllers 3
- ELET B61 Telecommunications 3
- INDR B12 Introduction to Drafting & CAD 2
- STDV B1 Student Development 1

Electives

- ELET B70, MFGT B1AB, WELD B1A, WELD B1B, AUTO B20 3

Total Required Units in area of Major 28

Program Pre-requisites: None

**Program Projections** 24

**Labor Market Information**  [Download Occupation\\_Overview7677.docx \(/storage/lmi/85-64-Occupation\\_Overview7677.docx\)](#)

**Created At** 11/03/17 - 10:11 AM

**Status** Recommended

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Central/Mother Lode Region Specific Questions

**Advisory Minutes**  [Download BDP INDA Advisory Meeting Minutes.docx \(/storage/Central/Mother Lode/85-64-102-BDP INDA Advisory Meeting Minutes.docx\)](#)

**Bakersfield College, Baccalaureate Degree in Industrial Automation  
Advisory Committee Meeting  
May 5, 2017 in IT 201 – Bakersfield College**

**Members Present:**

Roy Allard, Bakersfield College  
Nathan Bender, Tasteful Selection  
Randy Cowart, Stantec Engineering  
Manny Fernandez, Bakersfield College  
Jonathan Geersen, Aera Energy  
Shawn Hatton, Caltrol Inc.  
Catherine Jones, Bakersfield College  
Brian Miller, KHSD  
Ed Neilands, Sierra Pacific Industries  
Fred Nilson, akiet  
Blair Pruett, Kern Steel Fabrication  
Cynthia Quintanilla, Bakersfield College  
Liz Rozell, Bakersfield College  
Tom Rush, Bakersfield College  
Dick Taylor, Kern County Veterans Service  
Thomas Wilson, Contra Costa Electric  
Dan Martin, Nestle

**Guests:**

Mike Blakely, Grimmway Farms  
Tyler Meyer, Rio Tinto  
Nora Seronello, Modesto Junior College

**Welcome & Introductions:**

- Meeting was called to order by Manny Fernandez 11:05 p.m. He welcomed all in attendance.

All in attendance introduced themselves.

**Safety Penta minute:**

- Catherine Jones spoke on the safety aspects of the work place regarding evacuation procedures. She spoke on the tours of the classrooms and the precautions that needed to be taken.

**Updates and Impacts on the INDA Program:**

- Dean Rozell updated the group. There are 15 colleges in the Pilot Programs accredited by ACCJC. The program had 1 recommendation regarding the Student/Program Outcomes. The change was made before the accreditation team came out.
- Please check out our web page found at [bakersfieldcollege.edu/Industrial Automation](http://bakersfieldcollege.edu/Industrial%20Automation).

**Review/Update on Baccalaureate Classes  
Review/Update on Marketing and AS**

- Manny updated the group on current students in the 1<sup>st</sup> year. Please see attached power points.
- Manny spoke on Industry Connections, Program changes for lower & upper division. Some discussion was held regarding CAD.
- Associate Degree discussed and impact on transfer from neighboring community colleges.
  - Board members were in support of planned courses and scheduling.

**Lower & Upper Division Cohort update:**

- Cynthia Quintanilla, Counselor for the Engineering Program and Baccalaureate Program, spoke on the informational sessions that have been held. To date 5 have been held.

**Committee Member Invitation/Application Process**

- Roy Allard spoke Committee Member Invitation/Application Process according to the by-laws. Please see attached Power Point.

**Survey Results/Curriculum Subcommittee**

- Tom Rush had sent out a survey at the beginning of the semester. There was not enough responses to generate any results.
- Tom also spoke on Course ID numbering system.

**By-Laws Adoption**

- Blair Pruett thanked everyone for their participation. Applauded the KHS district for their active participation.
- Internships were discussed. Wonderful opportunities for students and employers alike.
- Fred Nilson spoke on their Internship programs. Gave kudos to Dean Rozell and faculty.

**Web Video Volunteers**

- Those in attendance were asked to volunteer to do a Web Video regarding the program.

Students in attendance were introduced, and will mingle with the Board members during lunch and will take anyone that wants to go on tours of the labs.

With no further business the meeting was adjourned at 12:20 p.m. with lunch following.

Submitted by  
Roy Allard