



# Labor Market Analysis for Program Recommendation Semiconductor Process Technician Occupations Foothill 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 Semiconductor Process Technician workers compared to the demand for this cluster of occupations in the Bay region and in the Silicon Valley sub-region (Santa Clara counties). There is a projected annual gap of about 226 students in the Bay region and 103 students in the Silicon Valley Sub-Region.

## Introduction

This report provides student outcomes data on employment and earnings for TOP 0945.00 - Industrial Systems Technology and Maintenance programs in the state and region. It is recommended that these 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 Foothill College and in the region.

This report profiles Semiconductor Process Technician Occupations in the 12 county Bay region and in the Silicon Valley sub-region for a proposed new program at Foothill College.

- **Electrical and Electronics Drafters (17-3012):** Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.  
Entry-Level Educational Requirement: Associate’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 58%
- **Industrial Engineering Technologists and Technicians (17-3026):** 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.  
Entry-Level Educational Requirement: Associate’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 51%

## Occupational Demand

**Table 1. Employment Outlook for Semiconductor Process Technician Occupations in Bay Region**

| Occupation   | 2021 Jobs    | 2026 Jobs    | 5-yr Change | 5-yr % Change | 5-yr Total Openings | Annual Openings | 25% Hourly Earning | Median Hourly Wage |
|--|--------------|--------------|-------------|---------------|---------------------|-----------------|--------------------|--------------------|
| Electrical and Electronics Drafters                  | 884          | 967          | 83          | 9%            | 512                 | 102             | \$31               | \$39               |
| Industrial Engineering Technologists and Technicians | 985          | 1,212        | 227         | 23%           | 766                 | 153             | \$27               | \$32               |
| <b>Total</b>   | <b>1,868</b> | <b>2,179</b> | <b>311</b>  | <b>17%</b>    | <b>1,278</b>        | <b>255</b>      |                    |                    |

Source: Lightcast 2022.3

**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 Semiconductor Process Technician Occupations in Silicon Valley Sub-region**

| Occupation   | 2021 Jobs  | 2026 Jobs  | 5-yr Change | 5-yr % Change | 5-yr Total Openings | Annual Openings | 25% Hourly Earning | Median Hourly Wage |
|--|------------|------------|-------------|---------------|---------------------|-----------------|--------------------|--------------------|
| Electrical and Electronics Drafters                  | 470        | 496        | 26          | 6%            | 248                 | 50              | \$34               | \$44               |
| Industrial Engineering Technologists and Technicians | 416        | 492        | 76          | 18%           | 301                 | 60              | \$28               | \$34               |
| <b>Total</b>   | <b>886</b> | <b>988</b> | <b>102</b>  | <b>12%</b>    | <b>549</b>          | <b>110</b>      |                    |                    |

Source: Lightcast 2022.3

**Silicon Valley Sub-Region includes:** Santa Clara Counties

## Job Postings in Bay Region and Silicon Valley Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Aug. 2022 - July 2023)**

| Occupation   | Bay Region | Silicon Valley |
|--|------------|----------------|
| Industrial Engineering Technologists and Technicians | 5,409      | 1,553          |
| Electrical and Electronics Drafters                  | 869        | 606            |

Source: Lightcast

**Table 4a. Top Job Titles for Semiconductor Process Technician Occupations for latest 12 months (Aug. 2022 - July 2023) - Bay Region**

| Title                             | Bay   | Title                              | Bay |
|-----------------------------------|-------|------------------------------------|-----|
| Manufacturing Technicians         | 1,071 | Operations Technicians             | 68  |
| Maintenance Technicians           | 1,058 | Automotive Maintenance Technicians | 59  |
| Production Technicians            | 358   | Analog IC Design Engineers         | 51  |
| Equipment Maintenance Technicians | 142   | Manufacturing Specialists          | 45  |
| Maintenance Workers               | 132   | Process Operators                  | 44  |
| Process Technicians               | 132   | Production Test Technicians        | 40  |
| Analog Design Engineers           | 118   | Maintenance Engineers              | 39  |

| Title                                 | Bay | Title         | Bay |
|---------------------------------------|-----|---------------|-----|
| Electrical Designers                  | 77  | PCB Designers | 39  |
| Manufacturing Engineering Technicians | 68  | CAD Engineers | 38  |

Source: Lightcast

**Table 4b. Top Job Titles for Semiconductor Process Technician Occupations for latest 12 months (Aug. 2022 – July 2023) - Silicon Valley Sub-Region**

| Title                                 | Silicon Valley | Title                              | Silicon Valley |
|---------------------------------------|----------------|------------------------------------|----------------|
| Manufacturing Technicians             | 400            | Electrical Designers               | 36             |
| Maintenance Technicians               | 200            | Plating Operators                  | 28             |
| Analog Design Engineers               | 113            | Production Test Technicians        | 28             |
| Process Technicians                   | 83             | Maintenance Workers                | 27             |
| Production Technicians                | 66             | Manufacturing Assembly Technicians | 27             |
| Analog IC Design Engineers            | 51             | Equipment Maintenance Engineers    | 24             |
| Manufacturing Engineering Technicians | 45             | PCB Designers                      | 24             |
| Equipment Maintenance Technicians     | 44             | Analog Designers                   | 17             |
| CAD Engineers                         | 36             | Cleanroom Technicians              | 17             |

Source: Lightcast

## Industry Concentration

**Table 5. Industries hiring Semiconductor Process Technician Workers in Bay Region**

| Industry - 6 Digit NAICS (No. American Industry Classification) Codes  | Jobs in Industry (2021) | Jobs in Industry (2026) | % Change (2021-26) | % Occupation Group in Industry (2022) |
|--|-------------------------|-------------------------|--------------------|---------------------------------------|
| Semiconductor and Related Device Manufacturing   | 242                     | 261                     | 8%                 | 12%                                   |
| Engineering Services   | 234                     | 258                     | 10%                | 12%                                   |
| Electronic Computer Manufacturing  | 218                     | 196                     | -10%               | 9%                                    |
| Electrical Contractors and Other Wiring Installation Contractors   | 89                      | 107                     | 20%                | 5%                                    |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) | 58                      | 92                      | 57%                | 3%                                    |
| Other Electronic Component Manufacturing   | 45                      | 47                      | 3%                 | 2%                                    |
| Printed Circuit Assembly (Electronic Assembly) Manufacturing   | 50                      | 53                      | 5%                 | 2%                                    |
| Research and Development in Biotechnology (except Nanobiotechnology)   | 38                      | 66                      | 75%                | 2%                                    |
| Architectural Services   | 33                      | 39                      | 17%                | 2%                                    |

| Industry - 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2021) | Jobs in Industry (2026) | % Change (2021-26) | % Occupation Group in Industry (2022) |
|---|-------------------------|-------------------------|--------------------|---------------------------------------|
| Pharmaceutical Preparation Manufacturing                              | 32                      | 38                      | 16%                | 2%                                    |

Source: Lightcast 2022.3

**Table 6. Top Employers Posting Semiconductor Process Technician Occupations in Bay Region and Silicon Valley Sub-Region (Aug. 2022 - July 2023)**

| Employer       | Bay | Employer          | Silicon Valley |
|----------------|-----|-------------------|----------------|
| Aerotek        | 150 | Apple             | 50             |
| Tesla          | 139 | Randstad          | 44             |
| Randstad       | 131 | Sanmina           | 38             |
| Kelly Services | 109 | Actalent          | 33             |
| Puls           | 102 | Aerotek           | 28             |
| AT&T           | 89  | Applied Materials | 28             |

Source: Lightcast

### Educational Supply

There are three (3) community colleges in the Bay Region issuing 28 awards on average annually (last 3 years ending 2021-22) on TOP 0945.00 - Industrial Systems Technology and Maintenance. In the Silicon Valley Sub-Region, there is one (1) community college that issued six (6) awards on average annually (last 3 years) on this TOP code.

There is one (1) other CTE educational institution in the Bay Region issuing one (1) award on average annually (last 3 years ending 2021-22) on CIP 47.0303 - Industrial Mechanics and Maintenance Technology/Technician. There are no other CTE educational institution in the Silicon Valley Sub-Region issuing awards on average annually (last 3 years) on this CIP code.

**Table 7. Community College Awards on TOP 0945.00 - Industrial Systems Technology and Maintenance in Bay Region**

| College       | Subregion      | Associate Degree | High unit Certificate | Low unit Certificate | Total     |
|---------------|----------------|------------------|-----------------------|----------------------|-----------|
| Laney         | East Bay       | 0                | 0                     | 1                    | 1         |
| Los Medanos   | East Bay       | 12               | 8                     | 1                    | 21        |
| San Jose City | Silicon Valley | 2                | 4                     | 0                    | 6         |
| <b>Total</b>  |                | <b>14</b>        | <b>12</b>             | <b>2</b>             | <b>28</b> |

Source: Data Mart

Note: The annual average for awards is 2019-20 to 2021-22.

**Table 7b. Other CTE Institutions Awards on CIP 47.0303 - Industrial Mechanics and Maintenance Technology/Technician in Bay Region**

| College                                   | Subregion | Certificates of at least 1 but < 2 years | Total |
|---|-----------|--|-------|
| Aviation Institute of Maintenance-Fremont | East Bay  | 1  | 1     |

| College      | Subregion | Certificates of at least 1 but < 2 years | Total |
|--------------|-----------|--|-------|
| <b>Total</b> |           | 1  | 1     |

Source: Data Mart

Note: The annual average for awards is 2019-20 to 2021 -22.

## Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 255 annual openings for the Semiconductor Process Technician occupational cluster and 29 annual (3-year average) awards for an annual undersupply of 226 students. In the Silicon Valley Sub-Region, there is also a gap with 110 annual openings and seven (7) annual (3-year average) awards for an annual undersupply of 103 students.

## Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0945.00 - Industrial Systems Technology and Maintenance**

| Metric Outcomes   | Bay All CTE Programs | Foothill All CTE Programs | State 0945.00 | Bay 0945.00 | Silicon Valley 0945.00 | Foothill 0945.00 |
|---|----------------------|---------------------------|---------------|-------------|------------------------|------------------|
| Students with a Job Closely Related to Their Field of Study | 74%                  | 88%                       | 74%           | 79%         | 71%                    | N/A              |
| Median Annual Earnings for SWP Exiting Students             | \$53,090             | \$73,174                  | \$49,735      | \$61,436    | \$71,804               | N/A              |
| Median Change in Earnings for SWP Exiting Students          | 24%                  | 42%                       | 35%           | 43%         | 34%                    | N/A              |
| Exiting Students Who Attained the Living Wage               | 54%                  | 66%                       | 66%           | 61%         | 72%                    | N/A              |

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

## Skills, Certifications and Education

**Table 9. Top Skills for Semiconductor Process Technician Occupations in Bay Region (Aug. 2022 – July 2023)**

| Skill                        | Posting | Skill                         | Posting |
|------------------------------|---------|-------------------------------|---------|
| Good Manufacturing Practices | 715     | Test Equipment                | 334     |
| Hand Tools                   | 597     | Production Equipment          | 332     |
| Preventive Maintenance       | 506     | Semiconductors                | 320     |
| Manufacturing Processes      | 477     | Electrical Systems            | 309     |
| Machinery                    | 448     | Environment Health And Safety | 302     |
| Power Tool Operation         | 407     | Debugging                     | 292     |
| Automation                   | 401     | General Mathematics           | 286     |
| Electrical Engineering       | 397     | Electronics                   | 270     |
| Equipment Maintenance        | 384     | Hydraulics                    | 250     |

| Skill                        | Posting | Skill          | Posting |
|------------------------------|---------|----------------|---------|
| Standard Operating Procedure | 367     | Forklift Truck | 245     |

Source: Lightcast

**Table 10. Certifications for Semiconductor Process Technician Occupations in Bay Region (Aug. 2022 - July 2023)**

| Certification                                      | Posting | Certification                         | Posting |
|--|---------|---------------------------------------|---------|
| Valid Driver's License                             | 782     | DOT Certification                     | 17      |
| Security Clearance                                 | 77      | CDL Class B License                   | 14      |
| CDL Class C License                                | 69      | Engineer in Training                  | 13      |
| Airframe & Powerplant (A&P) Certificate            | 53      | Certified Mold Remediation Technician | 13      |
| Forklift Certification                             | 50      | LEED Accredited Professional (AP)     | 12      |
| FCC General Radiotelephone Operator License (GROL) | 25      | CompTIA A+                            | 12      |
| CDL Class A License                                | 22      | Professional Engineer (PE) License    | 12      |
| Commercial Driver's License (CDL)                  | 21      | Product Certification                 | 11      |

Source: Lightcast

**Table 11. Education Requirements for Semiconductor Process Technician Occupations in Bay Region**

| Education Level            | Job Postings | % of Total |
|----------------------------|--------------|------------|
| High school or GED         | 2,112        | 45%        |
| Associate degree           | 938          | 21%        |
| Bachelor's degree & higher | 1,605        | 34%        |

Source: Lightcast

Note: 44% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

## Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O\*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE Launchboard.

## Sources

O\*Net Online

Lightcast

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

Launchboard

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

## Contacts

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