** Advanced Manufacturing Technology Occupations**

**Labor Market Information Report**

**Evergreen Valley College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

September 2019

# Recommendation

Based on all available data, there appears to be a significant undersupply of Advanced Manufacturing Technology workers compared to the demand for this cluster of occupations in the Bay region and in the Silicon Valley sub-region (Santa Clara County.) There is a projected annual gap of about 7,375 students in the Bay region and 2,137 students in the Silicon Valley 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 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 Evergreen Valley College and in the region.

# Introduction

This report profiles Advanced Manufacturing Technology Occupations in the 12 county Bay region and in the Silicon Valley sub-region for a proposed new program at Evergreen Valley College.

|  |
| --- |
| * **Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic (SOC 51-4081):** Set up, operate, or tend more than one type of cutting or forming machine tool or robot.
 |
| Entry-Level Educational Requirement: High school *diploma or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 28% |
| * **Assemblers and Fabricators, All Other, Including Team Assemblers (SOC 51-2098):** 0
 |
| Entry-Level Educational Requirement: High *school diploma or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 0*%* |
| * **Inspectors, Testers, Sorters, Samplers, and Weighers (SOC 51-9061):** Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.
 |
| Entry-Level Educational Requirement: High *school diploma or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 37*%* |
| * **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: 53*%* |
|  |
| * **Engineering Technicians, Except Drafters**, **All Other (SOC 17-3029):** All engineering technicians, except drafters, not listed separately.
 |
| Entry-Level Educational Requirement: Associate's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 53*%* |

# Occupational Demand

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic |  742  |  902  | 160 | 22% |  601  |  120  | $12.20 | $17.03 |
| Assemblers and Fabricators, All Other, Including Team Assemblers |  31,607  |  33,855  | 2,247 | 7% |  22,030  |  4,406  | $11.99 | $16.91 |
| Inspectors, Testers, Sorters, Samplers, and Weighers |  13,891  |  13,815  | -76 | -1% |  8,597  |  1,719  | $13.64 | $21.91 |
| Electrical and Electronics Engineering Technicians |  9,335  |  9,377  | 42 | 0% |  4,186  |  837  | $18.56 | $30.66 |
| Engineering Technicians, Except Drafters, All Other |  3,024  |  3,172  | 148 | 5% |  1,478  |  296  | $20.46 | $33.46 |
| **Total** |  **58,600**  |  **61,121**  | **2,521** | **4%** |  **36,891**  |  **7,378**  | **$13.87** | **$21.14** |

*Source: EMSI 2019.2*

**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 Advanced Manufacturing Technology Occupations in Silicon Valley Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic |  156  |  190  | 34 | 22% |  128  |  26  | $12.29 | $16.15 |
| Assemblers and Fabricators, All Other, Including Team Assemblers |  8,553  |  7,818  | -735 | -9% |  4,746  |  949  | $12.19 | $16.45 |
| Inspectors, Testers, Sorters, Samplers, and Weighers |  5,280  |  4,889  | -391 | -7% |  3,030  |  606  | $14.09 | $22.17 |
| Electrical and Electronics Engineering Technicians |  5,469  |  5,325  | -144 | -3% |  2,304  |  461  | $18.52 | $30.85 |
| Engineering Technicians, Except Drafters, All Other |  1,155  |  1,146  | -9 | -1% |  491  |  98  | $19.98 | $32.90 |
| **TOTAL** |  **20,613**  |  **19,367**  | **-1,246** | **-6%** |  **10,699**  |  **2,140**  | **$14.80** | **$22.65** |

*Source: EMSI 2019.2*

**Silicon Valley Sub-Region** includes Santa Clara County

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

**Table 3. Number of Job Postings by Occupation for latest 12 months (September 2018 - August 2019)**

| Occupation | Bay Region | Silicon Valley |
| --- | --- | --- |
|  Inspectors, Testers, Sorters, Samplers, and Weighers | 3,566 | 1,251 |
|  Manufacturing Production Technicians | 2,231 | 806 |
|  Team Assemblers | 1,583 | 607 |
|  Electrical Engineering Technicians | 81 | 33 |
|  Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 21 | 10 |
|  **Total** | **7,482** | **2,707** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Advanced Manufacturing Technology Occupations for latest 12 months (September 2018 - August 2019) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Manufacturing Technician | 999 | Production Assembler | 105 |
| Assembler | 619 | Manufacturing Specialist | 75 |
| Production Technician | 511 | Sorter | 72 |
| Quality Assurance Specialist | 386 | Manual Tester | 64 |
| Quality Control Inspector | 381 | Assembly Operator | 50 |
| Quality Inspector | 345 | Assembly | 50 |
| Quality Assurance Inspector | 219 | Quality Control Associate | 49 |
| Assembly Technician | 216 | Assembly Worker | 47 |
| Tester | 182 | Quality Assurance Auditor | 38 |
| Quality Technician | 172 | Accessibility Tester | 35 |
| Operations Technician | 150 | Machine Operator | 34 |
| Process Technician | 136 | Quality Control | 31 |
| Inspector | 128 | Assembly Specialist | 29 |
| Quality Control Technician | 119 | Assembly - Optical Components | 28 |

**Table 4b. Top Job Titles for Advanced Manufacturing Technology Occupations for latest 12 months (September 2018 - August 2019) Silicon Valley Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Silicon Valley | Common Title | Silicon Valley |
| Manufacturing Technician | 325 | Manual Tester | 30 |
| Assembler | 270 | Production Assembler | 25 |
| Production Technician | 174 | Quality Control Technician | 24 |
| Quality Control Inspector | 127 | Assembly Operator | 23 |
| Quality Inspector | 117 | Assembly Specialist | 22 |
| Tester | 112 | Operator | 20 |
| Assembly Technician | 100 | Sorter | 18 |
| Quality Assurance Inspector | 92 | Data Tester | 18 |
| Quality Assurance Specialist | 88 | Assembly | 18 |
| Operations Technician | 77 | Android Tester | 17 |
| Inspector | 56 | Accessibility Tester | 17 |
| Quality Technician | 55 | Quality Assurance Auditor | 15 |
| Process Technician | 39 | Commercial Installer | 15 |
| Manufacturing Specialist | 30 | Plater | 14 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Advanced Manufacturing Technology Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2018) | Jobs in Industry (2022) | % Change (2018-22) | % in Industry (2018) |
| Automobile Manufacturing (336111) | 8,778 | 11,992 | 37% | 15% |
| Temporary Help Services (561320) | 5,469 | 5,802 | 6% | 9% |
| Semiconductor and Related Device Manufacturing (334413) | 4,196 | 3,662 | -13% | 7% |
| Electronic Computer Manufacturing (334111) | 2,495 | 2,555 | 2% | 4% |
| Semiconductor Machinery Manufacturing (333242) | 1,869 | 1,793 | -4% | 3% |
| Engineering Services (541330) | 1,251 | 1,365 | 9% | 2% |
| Surgical and Medical Instrument Manufacturing (339112) | 1,205 | 1,126 | -7% | 2% |
| Pharmaceutical Preparation Manufacturing (325412) | 1,014 | 1,026 | 1% | 2% |
| Testing Laboratories (541380) | 963 | 967 | 0% | 2% |
| Other Electronic Component Manufacturing (334419) | 851 | 615 | -28% | 1% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 809 | 768 | -5% | 1% |
| Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals (334515) | 797 | 685 | -14% | 1% |
| Printed Circuit Assembly (Electronic Assembly) Manufacturing (334418) | 795 | 908 | 14% | 1% |
| Heavy Duty Truck Manufacturing (336120) | 629 | 787 | 25% | 1% |
| Bare Printed Circuit Board Manufacturing (334412) | 576 | 392 | -32% | 1% |

*Source: EMSI 2019.2*

**Table 6. Top Employers Posting Advanced Manufacturing Technology Occupations in Bay Region and Silicon Valley Sub-Region (September 2018 - August 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Silicon Valley |
| Sanmina Corp | 45 | Bio Techne | 20 | Sanmina Corp | 34 |
| Genentech | 39 | Ultimate | 19 | Western Digital | 29 |
| Western Digital | 35 | Tekberry | 19 | Dimatix, Inc | 23 |
| Jabil Circuit | 35 | Varian Medical Systems | 18 | Jabil Circuit | 20 |
| Boehringer Ingelheim | 32 | Lonza | 18 | Ryzen Solutions | 19 |
| Finisar Corp | 30 | Fountain Group | 18 | Varian Medical Systems | 18 |
| Tesla | 29 | Etouch Systems Corp | 18 | Etouch Systems Corp | 18 |
| Ryzen Solutions | 29 | Milestone Technologies Inc | 17 | Employnet | 17 |
| DHL Express | 27 | Air Liquide | 17 | TE Connectivity | 16 |
| Employnet | 26 | Acara Solutions | 16 | Bio Techne | 14 |
| Gilead Sciences | 24 | Valassis | 15 | Sierra Circuits | 13 |
| Formfactor, Inc | 23 | US Department of Defense | 15 | Super Micro Computer Inc | 12 |
| Dimatix, Inc | 23 | Infinite Computing Systems | 15 | Applied Materials | 12 |
| TE Connectivity | 21 | Grifols | 15 | Winslow Automation/Six Sigma | 11 |
| Assemblers Inc | 21 | United Technologies Corp | 14 | Vivint Solar | 11 |
| Integrated Resources Inc | 20 | Danaher Corp | 14 | Tesla | 11 |
| Boston Scientific Corp | 20 | American Consumer Panels | 14 | Stanford University | 11 |

*Source: Burning Glass*

# Educational Supply

There is one college in the Bay Region and Silicon Valley Sub-Region (De Anza College) issuing 3 awards on average annually (last 3 years) on TOP 0956.00 - Manufacturing and Industrial Technology.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificates | Noncredit | Total |
| De Anza College | Silicon Valley | 3 | 1 | 0 | 3 |
| **Total Bay Region** | **3** | **1** | **0** | **3** |
| **Total Silicon Valley Sub-Region** | **3** | **1** | **0** | **3** |

# *Source: Data Mart*

Note: The annual average for awards is 2015-16 to 2017-18.

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 7,378 annual openings for the Advanced Manufacturing Technology occupational cluster and 3 annual (3-year average) awards for an annual undersupply of 7,375 students. In the Silicon Valley Sub-Region, there is also a gap with 2,140 annual openings and 3 annual (3-year average) awards for an annual undersupply of 2,137 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) | Evergreen Valley College (All CTE Programs) | State (0956.00) | Bay (0956.00) | Silicon Valley (0956.00) | Evergreen Valley College (0956.00) |
| % Employed Four Quarters After Exit | 74% | 76% | 75% | 77% | 77% | n/a |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $8,549 | $21,983 | $25,518 | $12,505 | n/a |
| Median % Change in Earnings | 46% | 75% | 60% | 60% | 68% | n/a |
| % of Students Earning a Living Wage | 63% | 53% | 67% | 75% | 85% | n/a |

*Source: Launchboard Pipeline (version available on 9/12/19)*

# Skills, Certifications and Education

**Table 9. Top Skills for Advanced Manufacturing Technology Occupations in Bay Region (September 2018 - August 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Quality Assurance and Control | 2,260 | Lifting Ability | 410 | Batch Records | 236 |
| Good Manufacturing Practices | 756 | Calipers | 389 | Coordinate Measuring Machine  | 233 |
| Hand Tools | 728 | Micrometers | 373 | Spreadsheets | 225 |
| Repair | 687 | Schematic Diagrams | 321 | Predictive/Preventative Maintenance | 222 |
| Microscope | 674 | Biotechnology | 319 | Electromechanical Assemblies | 208 |
| Packaging | 644 | Customer Service | 317 | Inspection Records | 196 |
| Scheduling | 606 | Test Equipment | 312 | Project Management | 195 |
| Quality Management | 596 | Manual Dexterity | 300 | Machinery | 194 |
| Manufacturing Processes | 570 | Chemistry | 286 | Calculation | 191 |
| Current Good Manufacturing Practices  | 523 | Power Tools | 268 | Wiring | 191 |
| Soldering | 483 | SAP | 265 | Welding | 183 |
| Basic Mathematics | 481 | 5S Methodology | 255 | Product Inspection | 179 |
| Data Entry | 476 | Enterprise Resource Planning (ERP) | 252 | Occupational Health and Safety | 172 |
| Calibration | 466 | Process Improvement | 250 | Personal Protective Equipment  | 172 |
| Cleaning | 419 | Record Keeping | 242 | Experiments | 167 |

*Source: Burning Glass*

**Table 10. Certifications for Advanced Manufacturing Technology Occupations in Bay Region (September 2018 - August 2019)**

Note: 88% 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 | 370 | Occupational Safety and Health Administration Certification | 13 |
| IPC Certification | 114 | Certified Internal Auditor (CIA) | 13 |
| Security Clearance | 51 | Certified Meeting Planner | 12 |
| Forklift Operator Certification | 51 | Certified A+ Technician | 12 |
| Biotechnology Certificate | 47 | Project Management Certification | 11 |
| American Society For Quality (ASQ) Certification | 36 | Hazard Analysis and Critical Control Point (HACCP) Certification | 11 |
| Welding Certification | 30 | Certified Lead Inspector | 11 |
| Certified Quality Technician (CQT) | 21 | Auditor Certification | 9 |
| Certified Outpatient Coding (COC) | 18 | Six Sigma Certification | 8 |
| Certified Welding Inspector (CWI) | 16 | Real Estate Certification | 8 |
| Certified Quality Auditor (CQA) | 14 | OSHA Safety 10 Hour | 8 |
| Certified Mechanical Inspector | 14 | CNC Certification | 8 |

*Source: Burning Glass*

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

Note: 48% 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 | Percent 12 Mos. Postings |
| High school or vocational training | 2,642 | 68% |
| Associate Degree | 323 | 8% |
| Bachelor’s Degree or Higher | 869 | 24% |

*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 CCCCO 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

Chancellor’s Office MIS system

# Contacts

For more information, please contact:

* Doreen O’Donovan, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), doreen@baccc.net or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544