

# Machine Technology Occupations

# Labor Market Information Report

# Laney College

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

**November 2021**

## Recommendation

Based on all available data, there appears to be an “undersupply” of Machine Technology workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda and Contra Costa counties). There is a projected annual gap of about 1,035 students in the Bay region and 404 students in the East Bay Sub-Region.

## Introduction

This report provides student outcomes data on employment and earnings for TOP 0956.30 Machining and Machine Tools 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 Laney College and in the region.

This report profiles Machine Technology Occupations in the 12 county Bay region and in the East Bay sub-region for a College/District program review at Laney College.

* **Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4032):** Set up, operate, or tend drilling machines to drill, bore, ream, mill, or countersink metal or plastic work pieces.
  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: 22%
* **Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034):** Set up, operate, or tend lathe and turning machines to turn, bore, thread, form, or face metal or plastic materials, such as wire, rod, or bar stock.
  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: 22%
* **Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic (51-4035):** Set up, operate, or tend milling or planing machines to mill, plane, shape, groove, or profile metal or plastic work pieces.
  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: 22%
* **Machinists (51-4041):** Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.
  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%
* **Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic (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: 27%

## Occupational Demand

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

| **Occupation** | **2020 Jobs** | **2025 Jobs** | **5-yr Change** | **5-yr % Change** | **5-yr Total Openings** | **Annual Openings** | **25% Hourly Earning** | **Median Hourly Wage** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 467 | 411 | -55 | -12% | 237 | 47 | $16 | $41 |
| Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 478 | 458 | -19 | -4% | 248 | 50 | $16 | $43 |
| Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic | 301 | 270 | -30 | -10% | 157 | 31 | $18 | $43 |
| Machinists | 7,564 | 7,748 | 183 | 2% | 4,528 | 906 | $20 | $49 |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 1,450 | 1,615 | 164 | 11% | 1,030 | 206 | $12 | $38 |
| **Total** | **10,260** | **10,502** | **242** | **2%** | **6,200** | **1,240** | **$18.44** | **$46.63** |
| Source: EMSI 2021.3 |

**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 Machine Technology Occupations in East Bay Sub-region**

| **Occupation** | **2020 Jobs** | **2025 Jobs** | **5-yr Change** | **5-yr % Change** | **5-yr Total Openings** | **Annual Openings** | **25% Hourly Earning** | **Median Hourly Wage** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 94 | 90 | -4 | -5% | 50 | 10 | $19 | $44 |
| Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 137 | 136 | -1 | -1% | 72 | 14 | $16 | $40 |
| Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic | 72 | 67 | -4 | -6% | 38 | 8 | $18 | $44 |
| Machinists | 2,611 | 2,706 | 95 | 4% | 1,588 | 318 | $20 | $51 |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 518 | 629 | 110 | 21% | 442 | 88 | $14 | $39 |
| **Total** | **3,432** | **3,628** | **196** | **6%** | **2,190** | **438** | **$18.87** | **$48.41** |
| Source: EMSI 2021.3 |

**East Bay Sub-Region includes:** Alameda and Contra Costa Counties

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

**Table 3. Number of Job Postings by Occupation for latest 12 months (Oct 2020 - Sep 2021)**

| **Occupation** | **Bay Region** | **East Bay** |
| --- | --- | --- |
| Machinists | 928 | 559 |
| Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 85 | 15 |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 39 | 3 |
| Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic | 36 | 7 |
| Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 30 | 10 |
| Source: Burning Glass |

**Table 4a. Top Job Titles for Machine Technology Occupations for latest 12 months (Oct 2020 - Sep 2021) Bay Region**

| **Title** | **Bay** | **Title** | **Bay** |
| --- | --- | --- | --- |
| Cnc Machinist | 187 | Cnc Mill Machinist | 13 |
| Machinist | 104 | Cnc Machinist II | 12 |
| Manual Machinist | 44 | Machinist I | 12 |
| Set Up Technician | 41 | Eyebrow Threader | 10 |
| Cnc Lathe Machinist | 25 | Set-Up Technician | 10 |
| Machinist II | 20 | Cnc Horizontal Mill Machinist | 8 |
| Machine Technician | 18 | Cnc Machinist - Large Format Machining Mill Orlathe | 8 |
| Cnc Machinist Setup/Operator | 14 | Cnc Prototyping Machinist - /Vr Labs | 8 |
| Machinist III | 14 | Machinist Set Up | 8 |
| Source: Burning Glass |

**Table 4b. Top Job Titles for Machine Technology Occupations for latest 12 months (Oct 2020 - Sep 2021) East Bay Sub-Region**

| **Title** | **East Bay** | **Title** | **East Bay** |
| --- | --- | --- | --- |
| Cnc Machinist | 105 | Set Up Technician | 7 |
| Machinist | 76 | Cnc Horizontal Mill Machinist | 6 |
| Manual Machinist | 20 | Cnc Lathe Machinist III | 6 |
| Machinist II | 18 | Cnc Machinist Setup/Operator | 6 |
| Cnc Lathe Machinist | 13 | Cnc Machinist - Torlon | 5 |
| Machinist III | 13 | Cnc Machinist II Swing 15A | 5 |
| Machinist I | 10 | Cnc Machinist III | 5 |
| Cnc Mill Machinist | 9 | Eyebrow Threader | 5 |
| Cnc Machinist II | 7 | Machinist Set | 5 |
| Source: Burning Glass |

## Industry Concentration

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

| **Industry – 6 Digit NAICS (No. American Industry Classification) Codes** | **Jobs in Industry (2020)** | **Jobs in Industry (2025)** | **% Change (2020-25)** | **% Occupation Group in Industry (2020)** |
| --- | --- | --- | --- | --- |
| Machine Shops | 2,578 | 2,551 | -1% | 26% |
| Semiconductor Machinery Manufacturing | 690 | 760 | 10% | 7% |
| Automobile Manufacturing | 428 | 542 | 27% | 4% |
| Temporary Help Services | 484 | 481 | -1% | 5% |
| Semiconductor and Related Device Manufacturing | 493 | 456 | -7% | 5% |
| Surgical and Medical Instrument Manufacturing | 314 | 367 | 17% | 3% |
| Electronic Computer Manufacturing | 173 | 195 | 13% | 2% |
| Sheet Metal Work Manufacturing | 156 | 170 | 9% | 2% |
| Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals | 143 | 138 | -4% | 1% |
| Electromedical and Electrotherapeutic Apparatus Manufacturing | 102 | 126 | 23% | 1% |
| Source: EMSI 2021.3 |

**Table 6. Top Employers Posting Machine Technology Occupations in Bay Region and East Bay Sub-Region (Oct 2020 - Sep 2021)**

| **Employer** | **Bay** | **Employer** | **East Bay** |
| --- | --- | --- | --- |
| Jabil Inc | 116 | Jabil Inc | 116 |
| Workers Com | 38 | Celestica | 22 |
| Sanmina Corporation | 35 | Human Bees | 20 |
| Multi Color Corporation | 30 | Benchmark Electronics | 18 |
| Human Bees | 23 | Sanmina Corporation | 17 |
| Celestica | 22 | Workers Com | 13 |
| Benchmark Electronics | 20 | Lawrence Livermore National Laboratory | 12 |
| Benchmark Precision Technologies | 15 | Benchmark Precision Technologies | 10 |
| Lawrence Livermore National Laboratory | 12 | Psg Global Solutions | 9 |
| Acara Solutions | 12 | Acara Solutions | 9 |
| Source: Burning Glass |

## Educational Supply

There are seven (7) community colleges in the Bay Region issuing 205 awards on average annually (last 3 years ending 2018-19) on TOP 0956.30 Machining and Machine Tools. In the East Bay Sub-Region, there are two (2) community colleges that issued 34 awards on average annually (last 3 years) on this TOP code.

**Table 7a. Community College Awards on TOP 0956.30 Machining and Machine Tools in Bay Region**

| **College** | **Subregion** | **Associate** | **Certificate Low** | **Noncredit** | **Total** |
| --- | --- | --- | --- | --- | --- |
| Chabot  | East Bay | 3 | 11 | 0 | 14 |
| De Anza | Silicon Valley | 11 | 43 | 0 | 54 |
| Laney | East Bay | 11 | 9 | 0 | 20 |
| Marin | North Bay | 0 | 1 | 0 | 1 |
| Napa | North Bay | 3 | 3 | 0 | 6 |
| San Jose City | Silicon Valley | 5 | 27 | 0 | 32 |
| Santa Rosa | North Bay | 4 | 44 | 30 | 78 |
| **Total** |  | **37** | **138** | **30** | **205** |
| Source: Data Mart |

*Note: The annual average for awards is 2016-17 to 2018-19.*

## Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,240 annual openings for the Machine Technology occupational cluster and 205 annual (3-year average) awards for an annual undersupply of 1,035 students. In the East Bay Sub-Region, there is also a gap with 438 annual openings and 34 annual (3-year average) awards for an annual undersupply of 404 students.

## Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0956.30 Machining and Machine Tools**

| **Metric Outcomes** | **Bay****All CTE Programs** | **Laney All CTE Programs** | **State 0956.30** | **Bay 0956.30** | **East Bay 0956.30** | **Laney 0956.30** |
| --- | --- | --- | --- | --- | --- | --- |
| Students with a Job Closely Related to Their Field of Study | 73% | 70% | 76% | 84% | 84% | 92% |
| Median Annual Earnings for SWP Exiting Students | $44,575 | $39,109 | $43,519 | $52,550 | $56,010 | $51,630 |
| Median Change in Earnings for SWP Exiting Students | 3% | 31% | 24% | 26% | 24% | 17% |
| Exiting Students Who Attained the Living Wage | 53% | 50% | 2% | 61% | 71% | 64% |
| Source: Launchboard Strong Workforce Program Median of 2016-18. |

## Skills, Certifications and Education

**Table 9. Top Skills for Machine Technology Occupations in Bay Region (Oct 2020 - Sep 2021)**

| **Skill** | **Posting** | **Skill** | **Posting** |
| --- | --- | --- | --- |
| Machining | 923 | Grinders | 140 |
| Computer Numerical Control (CNC) | 742 | Manufacturing Processes | 121 |
| Lathes | 594 | Hand Tools | 117 |
| Machine Tools | 313 | Cleaning | 113 |
| Calipers | 310 | Machine Operation | 106 |
| Micrometers | 308 | Geometric Dimensioning and Tolerancing (GD&T) | 84 |
| Engineering Drawings | 215 | Personal Protective Equipment (PPE) | 80 |
| Calculation | 206 | Manual Dexterity | 79 |
| Machinery | 194 | Mastercam | 79 |
| Computerized Numerical Control Lathes | 182 | Welding | 77 |
| Repair | 182 | Blueprint Reading | 72 |
| Lifting Ability | 167 | 5S Methodology | 67 |
| Drill Presses | 163 | Height Gauges | 61 |
| Dial Indicators | 150 | Basic Mathematics | 60 |
| Source: Burning Glass |

**Table 10. Certifications for Machine Technology Occupations in Bay Region (Oct 2020 - Sep 2021)**

| **Certification** | **Posting** | **Certification** | **Posting** |
| --- | --- | --- | --- |
| Driver's License | 47 | Machinist Certification | 2 |
| CNC Machine Operator | 17 | Machine Tool Technology Certification | 2 |
| OSHA Forklift Certification | 13 | Hazardous Materials Certification | 2 |
| Machine Shop | 8 | Electrician Certification | 2 |
| North American Defense Contractors Accreditation Program (NAD-CAP) | 7 | Certified Fluid Power | 2 |
| CDL Class A | 5 | Welding Certification | 1 |
| Sheet Metal Certification | 3 | PMMI Mechatronics Certification | 1 |
| Security Clearance | 2 | ISO 9000 Quality Management | 1 |
| OSHA Safety 10 Hour | 2 | AWS Certified Welder | 1 |
| Source: Burning Glass |

*Note: 91% of records have been excluded because they do not include a certification. As a result, the chart above may not be representative of the full sample.*

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

| **Education (minimum advertised)** | **Latest 12 Mos. Postings** | **Percent 12 Mos. Postings** |
| --- | --- | --- |
| High school or vocational training | 466 | 87% |
| Associate's degree | 50 | 9% |
| Bachelor's degree | 20 | 4% |
| Source: Burning Glass |

*Note: 52% 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.*

## 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/
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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