**Makerspace Coordinator Occupations**

**Labor Market Information Report**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

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# Recommendation

The LMI application for this occupational cluster notes that “the goal of the Makerspace Coordinator Certificate is to prepare individuals to create, manage, or become employed in makerspaces or fabrication laboratories in school, community center, and library environments. Current libraries, community centers, and schools are in dire need of trained, qualified adults to supervise, maintain, and create makerspaces or fabrication laboratories to build 21st century skills of critical thinking, problem-solving, creativity and imagination, and collaboration and teamwork.”

Because “Makerspaces” are an emerging program area at community colleges, at this time it is difficult to determine the actual demand for this position, as well as the number of students who are being trained to fill Makerspace Coordinator positions, from our current data sources.

Based on available data for the SOC codes selected that do not require a Bachelor’s degree and teaching credential, there are 848 annual openings in the Bay Region and 314 in Silicon Valley. Because at least two and perhaps three of the occupations selected (CTE Teachers, Middle School; CTE Teachers, Secondary School; and Education, Training and Library Workers, All Other) require a Bachelor’s degree and a teaching credential that can only be granted by a four year institution, the demand/annual openings for these three occupations have been excluded from the calculation for demand.

However, since the program appears to target incumbent workers employed as teachers and library workers, then the number of currently employed workers in the occupational cluster selected should also be considered. In 2017 there were over 10,900 workers employed in the region and about 3,500 in the Silicon Valley sub-region.

Since Makerspaces are an emerging program area, it is difficult to do a traditional labor market analysis. Typically, the number of postsecondary awards earned or the number of students who earned awards would be used to gauge supply. However, the TOP code selected - Other Education (TOP 0899.00) has very little data and should only be used when a TOP code does not already exist for the program area. COE would recommend that Foothill consider Educational Technology (TOP code 0860.00) for the proposed new program if it is created. The description in the TOP manual for Educational Technology is as follows: “Principles and techniques for use of technology to improve learning. Includes computer software and resources, multimedia enhancements, audio and video skills, and other technology strategies that assist teachers to enhance the delivery of curriculum.”

As stated above, there is insufficient student outcomes data in Launchboard for Other Education (TOP 0899.00) in the Bay Region. It is recommended that the student outcomes data be reviewed for students taking courses on Educational Technology as provided in this report in the “Student Outcomes” section. Please be aware that like the TOP code selected in the application (Other Education), Educational Technology (TOP 0860.00) may also include programs that are not necessarily training for the occupational cluster selected for this report.

# Introduction

This report profiles Makerspace Coordinator occupations in the 12 county Bay region and the Silicon Valley sub-region (Santa Clara County) for a proposed new Makerspace Coordinator Certificate at Foothill College.

* **Career/Technical Education Teachers, Middle School (SOC 25-2023)** Teach occupational, career and technical, or vocational subjects in public or private schools at the middle, intermediate, or junior high level, which falls between elementary and senior high school as defined by applicable laws and regulations.

*Entry-Level Educational Requirement:* *Bachelor’s Degree*

*Training Requirement:* *None*

*Percentage of Community College Award Holders or Some Postsecondary Coursework:* 5%

* **Career/Technical Education Teachers, Secondary School (SOC 25-2032)** Teach occupational, career and technical, or vocational subjects at the secondary school level in public or private schools.

*Entry-Level Educational Requirement:* *Bachelor’s Degree*

*Training Requirement:* *None*

*Percentage of Community College Award Holders or Some Postsecondary Coursework:* 5%

* **Education, Training, and Library Workers, All Other (SOC 25-9099)**: All education, training, and library workers not listed separately.

*Entry-Level Educational Requirement:* *Bachelor’s Degree*

*Training Requirement:* *None*

*Percentage of Community College Award Holders or Some Postsecondary Coursework:* 12%

* **Assemblers and Fabricators, All Other (SOC 51-2099)**: All assemblers and fabricators not listed separately.

*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:* 29%

* **Computer-Controlled Machine Tool Operators, Metal and Plastic (SOC 51-4011)**: Operate computer-controlled machines or robots to perform one or more machine functions on 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:* 44%

# Occupational Demand

**Table 1. Employment Outlook for Makerspace Coordinator Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-year Open-ings | Annual Open-ings | 10% Hrly Wage | Median Hrly Wage |
| CTE Teachers, Middle School | 209 | 234 | 25 | 12% | 102 | 20 | $22.11 | $32.81 |
| CTE Teachers, Secondary School | 958 | 1,050 | 92 | 10% | 433 | 87 | $21.74 | $31.64 |
| Education, Training, and Library Workers, All Other | 3,495 | 3,725 | 230 | 7% | 1,825 | 365 | $11.81 | $22.00 |
| Assemblers & Fabricators, All Other | 4,457 | 4,807 | 350 | 8% | 3,020 | 604 | $10.45 | $16.66 |
| Computer-Controlled Machine Tool Operators, Metal and Plastic | 1,824 | 2,077 | 253 | 14% | 1,218 | 244 | $11.72 | $19.20 |
| **Total** | **10,943** | **11,894** | **951** | **9%** | **6,597** | **1,319** | **$12.31** | **$20.41** |

*Source: EMSI 2018.1*

**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 Makerspace Coordinator Occupations in Silicon Valley Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-year Open-ings | Annual Open-ings | 10% Hrly Wage | Median Hrly Wage |
| CTE Teachers, Middle School | 75 | 81 | 6 | 8% | 33 | 7 | $23.36 | $35.78 |
| CTE Teachers, Secondary School | 306 | 319 | 13 | 4% | 120 | 24 | $24.90 | $37.27 |
| Education, Training, and Library Workers, All Other | 583 | 646 | 63 | 11% | 333 | 67 | $12.75 | $24.94 |
| Assemblers & Fabricators, All Other | 1,752 | 1,803 | 51 | 3% | 1,075 | 215 | $10.92 | $18.22 |
| Computer-Controlled Machine Tool Operators, Metal and Plastic | 783 | 876 | 93 | 12% | 496 | 99 | $13.32 | $20.88 |
| **Total** | **3,499** | **3,725** | **226** | **6%** | **2,056** | **411** | **$13.25** | **$21.97** |

*Source: EMSI 2018.1***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 (February 2017 – January 2018)**

|  |  |  |
| --- | --- | --- |
| Occupation | Bay Region | Silicon Valley |
| Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011.00) | 153 | 50 |
| Career/Technical Education Teachers, Middle School (25-2023.00) | 63 | 21 |
| Career/Technical Education Teachers, Secondary School (25-2032.00) | 37 | 10 |
| Assemblers and Fabricators, All Other (51-2099.00) | 25 | 6 |
| Education, Training, and Library Workers, All Other (25-9099.00) | 8 | 0 |
| **Total** | **286** | **87** |

*Source: Burning Glass*

**Table 4. Top Job Titles for Makerspace Coordinator Occupations for latest 12 months (February 2017 – January 2018)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Silicon Valley |  | Common Title | Bay | Silicon Valley | |
| CNC Operator | 76 | 19 |  | CNC Lathe Operator | 6 | 2 |
| CNC Machine Operator | 18 | 13 |  | Machine Operator | 6 | 0 |
| Senior Sdet | 16 | 6 |  | Experience With Key | 5 | 5 |
| Cnc Service Engineer | 9 | 1 |  | Furniture Installer | 5 | 3 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Makerspace Coordinator Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Industry – 4 Digit NAICS (No. American Industry Classification) Codes** | **Jobs in Industry (2017)** | **Jobs in Industry (2022)** | **% Change (2017-22)** | **% in Industry (2012)** |
| Elementary and Secondary Schools (Local Government) (903611) | 1,770 | 1,930 | 9% | 16.2% |
| Temporary Help Services (561320) | 1,547 | 1,760 | 14% | 14.1% |
| Colleges, Universities & Professional Schools (State Government) (902612) | 670 | 665 | (1%) | 6.1% |
| Machine Shops (332710) | 541 | 625 | 16% | 4.9% |
| Educational Support Services (611710) | 361 | 413 | 14% | 3.3% |
| Colleges, Universities, and Professional Schools (611310) | 340 | 371 | 9% | 3.1% |
| Colleges, Universities & Professional Schools (Local Government) (903612) | 318 | 327 | 3% | 2.9% |
| Semiconductor and Related Device Manufacturing (334413) | 226 | 228 | 1% | 2.1% |
| Elementary and Secondary Schools (611110) | 224 | 249 | 11% | 2.0% |
| Semiconductor Machinery Manufacturing (333242) | 209 | 235 | 12% | 1.9% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 169 | 164 | (3%) | 1.5% |
| Automobile Manufacturing (336111) | 120 | 155 | 29% | 1.1% |
| Surgical and Medical Instrument Manufacturing (339112) | 115 | 119 | 3% | 1.1% |
| Sheet Metal Work Manufacturing (332322) | 113 | 134 | 19% | 1.0% |

*Source: EMSI 2017.4*

**Table 6. Top Employers Posting Makerspace Coordinator Occupations in Bay Region and Silicon Valley for latest 12 months (February 2017 – January 2018)**

Note: 57% of records have been excluded because they do not include an employer. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employer** | **Bay** | **Silicon Valley** | **Employer** | **Bay** | **Silicon Valley** |
| Ametek Incorporated | 6 | 0 | Docusign Incorporated | 3 | 0 |
| Machine Zone | 5 | 5 | Jones Lang Lasalle Inc | 3 | 2 |
| Alameda Unified School District | 4 | 0 | Piner Olivet Union School District | 3 | 0 |
| Benchmark Electronics | 4 | 0 | Sprint Corporation | 3 | 0 |
| Apple Inc. | 3 | 3 | Amazon.com | 2 | 2 |

*Source: Burning Glass*

# Educational Supply

On the supply side, the TOP code selected is TOP 0899.00 - Other Education. There is only one college in the Bay Region issuing awards on this TOP code which is Ohlone, with two certificates awarded annually.

On TOP 0860.00 – Educational Technology, there is only one college in the Bay Region issuing certificates. College of Alameda in the East Bay issued five certificates on average for 2014-17.

**Table 7. Award on TOP 0860.00 Educational Technology in Bay the Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | CC Headcount | Associate Degrees | Certificates or Other Credit Awards | Total Awards |
| Alameda | East Bay | on another TOP | 0 | 5 | 5 |
| Evergreen | Silicon Valley | 114 | 0 | 0 | 0 |
| Foothill | Silicon Valley | 701 | 0 | 0 | 0 |
| Merritt | East Bay | 125 | 0 | 0 | 0 |
| **Total Bay Region** | | **953** | **0** | **5** | **5** |
| **Total Silicon Valley Sub-Region** | | **815** | **0** | **0** | **0** |

# *Source: IPEDS, Data Mart and Launchboard*

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for Associate Degrees and Certificates is 2014-17.

# Gap Analysis

As stated above in the Recommendation section, a traditional labor market gap analysis is difficult to do for the cluster of occupations and the TOP code selected. There are an ample number of currently employed workers in the occupational cluster in 2017 (nearly 11,000 in the Bay region and 3,500 in the Silicon Valley sub-region) as well as an ample number of annual openings (848 in the Bay region and 314 in the Silicon Valley sub-region). Because “Makerspaces” are an emerging program area at community colleges, at this time it is difficult to determine the number of students who are being trained to fill a Makerspace Coordinator position, as well as the actual demand for this position, from our current data sources.

# Student Outcomes

Student Outcomes data from Launchboard is not available for students who took courses on TOP 0899.00 - Other Education for the Bay Region for the four outcomes metrics listed in the table. However, there is data available for these metrics on TOP 0860.00 - Educational Technology in the Bay Region as shown in the table below. Merritt College is the top performing program on this TOP code in the state for the four student outcomes metrics shown.

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0860.00 – Educational Technology in 2015-16**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **2015-16** | **Bay Region (All CTE Programs)** | **Foothill**  **(All CTE Programs)** | **State (0860.00)** | **Bay Region (0860.00)** | **Foothill (0860.00)** | **Top College in Bay Region (086.00) Educational Technology** | |
| % Employed Four Quarters After Exit | 74% | 77% | 82% | 81% | 77% | Merritt | 92% |
| Median Earnings Two Quarters After Exit | $10,310 | $15,335 | not available in LB when report was run | $22,815 | $20,545 | Merritt | $25,090 |
| Median % Change in Earnings | 46% | 77% | not available in LB when report was run | 30% | 25% | Merritt | 35% |
| % of Students Earning a Living Wage | 63% | 76% | 83% | 88% | 86% | Merritt | 93% |

*Source: Launchboard (version available on 3/2/18)*

# Skills, Certificates and Education

**Table 9. Top Skills for Makerspace Coordinator Occupations in Bay Region (February 2017 – January 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Skill** | **Postings** | **Skill** | **Postings** | **Skill** | **Postings** |
| Computer Numerical Control (CNC) | 130 | Micrometers | 28 | G-Code | 17 |
| Machining | 68 | Machine Operation | 27 | Siemens Nixdorf Hardware | 17 |
| Inspection | 37 | JAVA | 26 | Computerized Numerical Control Lathes | 16 |
| Microsoft Excel | 36 | Machine Tools | 23 | Microsoft Word | 16 |
| Lathes | 31 | Machinery | 22 | C++ | 15 |
| Repair | 31 | CNC Machine | 19 | LINUX | 14 |
| Scheduling | 29 | Forklift Operation | 18 | Budgeting | 13 |
| Calipers | 28 | Python | 18 | Inventory Management | 13 |

*Source: Burning Glass*

**Table 10. Education Requirements for Makerspace Coordinator Occupations in Bay Region**

Note: 51% 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 | 66 (47%) |
| Associate Degree | 14 (10% |
| Bachelor’s Degree or Higher | 60 (43%) |

*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

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