



# Labor Market Analysis for Program Recommendation

## Digital Fabrication and Making Occupations

### Cabrillo 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 Digital Fabrication and Making workers compared to the demand for this cluster of occupations in the Bay region and in the SC-Monterey sub-region (Monterey, San Benito, Santa Cruz counties). There is a projected annual gap of about 419 students in the Bay region and 71 students in the SC-Monterey Sub-Region.

#### Introduction

This report provides student outcomes data on employment and earnings for TOP 1099.00 Other Fine and Applied Arts 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 Cabrillo College and in the region.

This report profiles Digital Fabrication and Making Occupations in the 12 county Bay region and in the SC-Monterey sub-region for a proposed new program at Cabrillo College.

- **Craft Artists (27-1012):** Create or reproduce hand-made objects for sale and exhibition using a variety of techniques, such as welding, weaving, pottery, and needlecraft.  
Entry-Level Educational Requirement: No formal educational credential  
Training Requirement: Long-term on-the-job training  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 26%
- **Tool and Die Makers (51-4111):** Analyze specifications, lay out metal stock, set up and operate machine tools, and fit and assemble parts to make and repair dies, cutting tools, jigs, fixtures, gauges, and machinists’ hand tools.  
Entry-Level Educational Requirement: Postsecondary nondegree award  
Training Requirement: Long-term on-the-job training  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 51%
- **Model Makers, Wood (51-7031):** Construct full-size and scale wooden precision models of products. Includes wood jig builders and loft workers.  
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: 26%
- **Jewelers and Precious Stone and Metal Workers (51-9071):** Design, fabricate, adjust, repair, or appraise jewelry, gold, silver, other precious metals, or gems. Includes diamond polishers and gem cutters, and persons who perform precision casting and modeling of molds, casting metal in molds, or setting precious and semi-precious

stones for jewelry and related products.

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: 33%

- **Computer Numerically Controlled Tool Programmers (51-9162): NA**

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: Moderate-term on-the-job training

Percentage of Community College Award Holders or Some Postsecondary Coursework: 46%

## Occupational Demand

**Table 1. Employment Outlook for Digital Fabrication and Making 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
Craft Artists	983	996	12	1%	593	119	\$34	\$120
Tool and Die Makers	396	452	56	14%	302	60	\$29	\$59
Model Makers, Wood	15	11	-3	-24%	0	0	\$14	\$56
Jewelers and Precious Stone and Metal Workers	1,110	1,029	-80	-7%	800	160	\$10	\$38
Computer Numerically Controlled Tool Programmers	614	671	57	9%	404	81	\$36	\$67
<b>Total</b>	<b>3,118</b>	<b>3,159</b>	<b>41</b>	<b>1%</b>	<b>2,099</b>	<b>420</b>		

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 Digital Fabrication and Making Occupations in SC-Monterey 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
Craft Artists	120	120	-0	-0%	71	14	\$34	\$109
Tool and Die Makers	53	65	12	23%	47	9	\$ 30	\$60
Model Makers, Wood	0	0	Insf	0%	0	0	\$14	\$56
Jewelers and Precious Stone and Metal Workers	215	234	19	9%	195	39	\$ 16	\$41
Computer Numerically Controlled Tool Programmers	62	72	10	16%	47	9	\$36	\$65
<b>Total</b>	<b>450</b>	<b>491</b>	<b>41</b>	<b>9%</b>	<b>360</b>	<b>71</b>		

Source: EMSI 2021.3

**SC-Monterey Sub-Region includes:** Monterey, San Benito, Santa Cruz Counties

**Job Postings in Bay Region and SC-Monterey Sub-Region**

**Table 3. Number of Job Postings by Occupation for latest 12 months (Jan 2021 - Dec 2021)**

Occupation	Bay Region	SC-Monterey
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	352	10
Jewelers	78	4
Tool and Die Makers	30	2
Craft Artists	15	0
Gem and Diamond Workers	3	0

Source: Burning Glass

**Table 4a. Top Job Titles for Digital Fabrication and Making Occupations for latest 12 months (Jan 2021 - Dec 2021) Bay Region**

Title	Bay	Title	Bay
Cnc Programmer	117	Cnc Machine Programmer	7
Cast Member	28	Tool And Die Maker	7
Bench Jeweler	23	Top Shop Cnc Programmer - Mastercam	7
Cnc Machinist/Programmer	17	5 Axis Cnc Programmer	6
Senior Cnc Programmer	13	Axis Cnc Programmer	5
Cnc Programmer/Machinist	12	Cnc Mill Programmer	5
Cnc Programmer - Mastercam	11	5 Axis Cnc Machining Programmer	4
Cnc Lathe Programmer	10	Application Engineer	4
Cnc Programmer Industrial Machinery	8	Cnc Programmer - Axis	4

Source: Burning Glass

**Table 4b. Top Job Titles for Digital Fabrication and Making Occupations for latest 12 months (Jan 2021 - Dec 2021) SC-Monterey Sub-Region**

Title	SC-Monterey	Title	SC-Monterey
Cast Member	3	Tool And Die Maker, Facility & Safety Manager, Isc Support	1
Axis Cnc Programmer	2	Top Shop Cnc Programmer - Mastercam	1
Cnc Machinist/Programmer	2	Bench Jeweler	1
Cnc Parts Developer	2	Cnc Programmer	1
About & Keller	1	Cnc Programmer/Machinist	1
Senior Cnc Programmer	1		

Title	SC-Monterey	Title	SC-Monterey
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Source: Burning Glass

## Industry Concentration

**Table 5. Industries hiring Digital Fabrication and Making 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)
Independent Artists, Writers, and Performers	605	669	11%	20%
Jewelry Stores	403	340	-16%	13%
Machine Shops	181	195	8%	6%
Jewelry and Silverware Manufacturing	146	158	8%	5%
Automobile Manufacturing	68	91	34%	2%
Sign Manufacturing	75	74	-1%	2%
Semiconductor and Related Device Manufacturing	66	68	3%	2%
Luggage and Leather Goods Stores	58	65	12%	2%
Semiconductor Machinery Manufacturing	43	53	22%	1%
Machine Tool Manufacturing	40	50	23%	1%

Source: EMSI 2021.3

**Table 6. Top Employers Posting Digital Fabrication and Making Occupations in Bay Region and SC-Monterey Sub-Region (Jan 2021 - Dec 2021)**

Employer	Bay	Employer	SC-Monterey
CEC Entertainment	28	Joby Aviation	3
Sanmina Corporation	17	CEC Entertainment	3
Shane Company	9	Constructors Racing Group	2
Diamond Ring Company	9	Pacon Manufacturing Corporation	1
Pacon Manufacturing Corporation	7	Img Companies Llc Livermore	1
Cavalry Aerospace	7	Doerksen Precision Products	1
Benchmark Electronics	6	Diamonds Forever	1
Carbon Incorporated	5	Attorneys At Law	1

Source: Burning Glass

## Educational Supply

There is one (1) community college in the Bay Region issuing 1 award on average annually (last 3 years ending 2018-19) on TOP 1099.00 Other Fine and Applied Arts. In the SC-Monterey Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

**Table 7. Community College Awards on TOP 1099.00 Other Fine and Applied Arts in Bay Region**

College	Subregion	Certificate Low	Total
Berkeley City	East Bay	1	1
<b>Total</b>		<b>1</b>	<b>1</b>

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 420 annual openings for the Digital Fabrication and Making occupational cluster and 1 annual (3-year average) award for an annual undersupply of 419 students. In the SC-Monterey Sub-Region, there is also a gap with 71 annual openings and no annual (3-year average) awards for an annual undersupply of 71 students.

## Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 1099.00 Other Fine and Applied Arts**

Metric Outcomes	Bay All CTE Programs	Cabrillo All CTE Programs	State 1099.00	Bay 1099.00	SC-Monterey 1099.00	Cabrillo 1099.00
Students with a Job Closely Related to Their Field of Study	73%	76%	61 %	N/A	N/A	N/A
Median Annual Earnings for SWP Exiting Students	\$44,575	\$39,206	\$21,503	\$28,151	N/A	N/A
Median Change in Earnings for SWP Exiting Students	30%	3%	15%	N/A	N/A	N/A
Exiting Students Who Attained the Living Wage	53%	50%	20%	N/A	N/A	N/A

Source: Launchboard Strong Workforce Program Median of 2016-18.

## Skills, Certifications and Education

**Table 9. Top Skills for Digital Fabrication and Making Occupations in Bay Region (Jan 2021 - Dec 2021)**

Skill	Posting	Skill	Posting
Computer Numerical Control (CNC)	355	Customer Service	43
Machining	245	G-Code	43
Mastercam	172	Geometry	41
Lathes	112	Micrometers	41
SolidWorks	104	Engineering Drawings	40
CAD / CAM (Computer-Aided Design/Manufacturing)	65	Machinery	40
Repair	60	Computer Aided Manufacturing (CAM)	33

Skill	Posting	Skill	Posting
Computer-Aided Manufacturing (CAM)	54	Manufacturing Processes	33
Machine Tools	53	Basic Mathematics	31
Computerized Numerical Control Lathes	50	Personal Protective Equipment (PPE)	31
Calipers	47	Scheduling	31
Cleaning	46	5S Methodology	28
Geometric Dimensioning and Tolerancing (GD&T)	44	Soldering	27
Welding	44	5-Axis Machining	26

Source: Burning Glass

**Table 10. Certifications for Digital Fabrication and Making Occupations in Bay Region (Jan 2021 - Dec 2021)**

Certification	Posting	Certification	Posting
Driver's License	21	Certified Business Manager	1
CNC Machine Operator	11	CDL Class A	1
CNC Machine Programming	4	American Society For Quality (ASQ) Certification	1
Programming Certification	2	Certified Teacher	1
Machine Shop	2	Certified Manufacturing Engineer (CMfgE)	1
Project Management Certification	1	Certified Crane Operator	1
OSHA Forklift Certification	1		

Source: Burning Glass

Note: 93% 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 Digital Fabrication and Making Occupations in Bay Region**

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	190	87%
Associate's degree	7	3%
Bachelor's degree	22	10%

Source: Burning Glass

Note: 54% 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 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 CCCCCO 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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