Digital Fabrication Technology Occupations
Labor Market Information Report
Laney 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 Technology workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda, Contra Costa counties). There is a projected annual gap of about 527 students in the Bay region and 182 students in the East Bay 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 Laney College and in the region.

This report profiles Digital Fabrication Technology Occupations in the 12 county Bay region and in the East Bay sub-region for a proposed new program at Laney College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Potters, Manufacturing (51-9195.05), therefore, the data shown in Tables 1 and 2 is for Molders, Shapers, and Casters, Except Metal and Plastic (51-9195) (at the six digit SOC level) and likely overstates demand for Potters, Manufacturing. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Potters, Manufacturing (51-9195.05).

- **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%

- **Artists and Related Workers, All Other (27-1019):** All artists and related workers not listed separately.
  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%

- **Commercial and Industrial Designers (27-1021):** Develop and design manufactured products, such as cars, home appliances, and children's toys. Combine artistic talent with research on product use, marketing, and materials to create the most functional and appealing product design.
  Entry-Level Educational Requirement: Bachelor's degree
  Training Requirement: None
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 24%

- **Set and Exhibit Designers (27-1027):** Design special exhibits and movie, television, and theater sets. May study scripts, confer with directors, and conduct research to determine appropriate architectural styles.

Entry-Level Educational Requirement: Bachelor's degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 29%

- **Molders, Shapers, and Casters, Except Metal and Plastic (51-9195):** Mold, shape, form, cast, or carve products such as food products, figurines, tile, pipes, and candles consisting of clay, glass, plaster, concrete, stone, or combinations of materials.
    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: 30%

Occupational Demand

Table 1. Employment Outlook for Digital Fabrication Technology Occupations in Bay Region

Occupation	2019 Jobs	2024 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Craft Artists	938	952	14	1%	541	108	$ 3.69	$ 10.72
Artists and Related Workers, All Other	299	291	-8	-3%	172	34	$ 9.12	$ 17.05
Commercial and Industrial Designers	1,254	1,286	32	3%	672	134	$ 28.38	$ 38.49
Set and Exhibit Designers	1,550	1,575	25	2%	820	164	$ 12.33	$ 22.33
Molders, Shapers, and Casters, Except Metal and Plastic	774	775	1	0%	453	91	$ 14.44	$ 19.22
Total	**4,815**	**4,879**	**64**	**1%**	**2,658**	**531**	**$14.97**	**$23.45**

Source: EMSI 2020.4
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 Technology Occupations in East Bay Sub-region

Occupation	2019 Jobs	2024 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Craft Artists	335	345	10	3%	198	40	$ 3.84	$ 11.38
Artists and Related Workers, All Other	74	70	-4	-5%	41	8	$ 6.42	$ 18.29
Commercial and Industrial Designers	456	468	12	3%	243	49	$ 28.24	$ 35.18
Set and Exhibit Designers	475	496	21	4%	263	53	$ 12.19	$ 21.84
Molders, Shapers, and Casters, Except Metal and Plastic	291	288	-3	-1%	163	33	$ 13.80	$ 18.93
Total	**1,631**	**1,667**	**36**	**2%**	**908**	**183**	**$14.99**	**$22.74**

Source: EMSI 2020.4
East Bay Sub-Region includes: Alameda, 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 (Dec 2019-Nov 2020)

Occupation	Bay Region	East Bay
Commercial and Industrial Designers	4,096	320
Set and Exhibit Designers	32	5
Craft Artists	13	4
Artists and Related Workers, All Other	2	0

Occupation	Bay Region	East Bay

Source: Burning Glass

Table 4a. Top Job Titles for Digital Fabrication Technology Occupations for latest 12 months (Dec 2019-Nov 2020) Bay Region

Title	Bay	Title	Bay
Product Designer	702	Head Of Product Design	28
Senior Product Designer	496	Product Design Engineer	23
Lead Product Designer	126	Ux Product Designer	21
Product Engineer	117	Staff Product Engineer	18
Principal Product Designer	63	Product Designer, Growth	18
Product Design Lead	45	Associate Product Designer	17
Product Development Engineer	42	Product Development Technician	16
Senior Product Engineer	38	Senior Industrial Designer	15
Industrial Designer	33	Digital Product Designer	15

Source: Burning Glass

Table 4b. Top Job Titles for Digital Fabrication Technology Occupations for latest 12 months (Dec 2019-Nov 2020) East Bay Sub-Region

Title	East Bay	Title...	East Bay...
Product Designer	41	Head Of Product Design	5
Product Engineer	22	Senior Product Engineer - Sisw - Mg	4
Senior Product Designer	16	Senior Product Development Engineer	4
Senior Product Engineer	8	Principal Product Designer	4
Product Development Technician	8	Clinical Imaging Senior Scientist, Personalized Healthcare Phc	4
Ux Designer Product	7	Ski And Snowboard Expert	3
Scientist/Senior Scientist	6	Senior Scientist	3
Ux Product Designer	5	Senior Product Engineer Low Power Rtl - Sisw - Mg	3
Lead Product Designer	5	Rf Power Product Engineer	3

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Digital Fabrication Technology Workers in Bay Region

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2019)	Jobs in Industry (2024)	% Change (2019-24)	% Occupation Group in Industry (2019)
Independent Artists, Writers, and Performers	573	593	3%	12%
Graphic Design Services	567	548	-3%	12%
Interior Design Services	488	516	6%	10%
Electronic Computer Manufacturing	107	113	5%	2%
Other Specialized Design Services	101	107	5%	2%
Corporate, Subsidiary, and Regional Managing Offices	100	96	-4%	2%
Theater Companies and Dinner Theaters	96	99	3%	2%
Musical Groups and Artists	92	93	1%	2%
Motion Picture and Video Production	85	91	6%	2%

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2019)	Jobs in Industry (2024)	% Change (2019-24)	% Occupation Group in Industry (2019)
Ready-Mix Concrete Manufacturing	86	84	-2%	2%

Source: EMSI 2020.4

Table 6. Top Employers Posting Digital Fabrication Technology Occupations in Bay Region and East Bay Sub-Region (Dec 2019-Nov 2020)

Employers	Bay	Employer	East Bay
Apple Inc.	130	Lam Research Corporation	18
Facebook	99	Siemens	14
Intuit	57	University Of California Berkeley	11
Amazon	40	Delta Dental	9
Intel Corporation	32	10X Genomics	5
Salesforce	30	Sirius XM Radio	4
Vmware Incorporated	26	Risk Management Solutions	4
Nvidia Corporation	25	Red Oak Technologies	4
Uber	24	Launchdarkly	4
Western Digital	23	Workday, Inc	3
Wells Fargo	22	Veeva Systems	3
Cisco Systems Incorporated	21	Tranzeal, Inc	3
Lam Research Corporation	20	Sunpower Corporation	3
Cadence Design Systems Incorporated	20	Square	3

Source: Burning Glass

Educational Supply

There is a one (1) community college in the Bay Region and East Bay sub-region issuing 1 award on average annually (last 3 years) on TOP 1099.00 - Other Fine and Applied Arts. There is a one (1) Other CTE Institution in the Bay region that issued three (3) awards on average annually (last 3 years) on this TOP code.

Table 7a. 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
Total Bay Region		**1**	**1**

Source: Data Mart
Note: The annual average for awards is 2016-17 to 2018-19.

Table 7b. Other CTE Instituton Awards on TOP 1099.00 - Other Fine and Applied Arts in Bay Region

College	Subregion	Postbaccalaureate certificate	Total
California College of the Arts	Mid-Peninsula	3	3
Total Bay Region		**3**	**3**

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 531 annual openings for the Digital Fabrication Technology occupational cluster and 4 annual (3-year average) awards for an

annual undersupply of 527 students. In the East Bay Sub-Region, there is also a gap with 183 annual openings and 1 annual (3-year average) award for an annual undersupply of 182 students.

Student Outcomes

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

2017-18	Bay All CTE Program	Laney All CTE Program	State 1099.00	Bay 1099.00	East Bay 1099.00	Laney 1099.00
% Employed Four Quarters After Exit	67%	65%	21%	60%	67%	NA
Median Quarterly Earning Two Quarters After Exit	$11,466	$9,825	$5,626	$7,880	$7,444	NA
Median % Change in Earning	31%	28%	27%	30%	NA	NA
% of Students Earning a Living Wage	53%	47%	25%	NA	NA	NA

Source: Launchboard Pipeline (version available on August 2020)

Skills, Certifications and Education

Table 9. Top Skills for Digital Fabrication Technology Occupations in Bay Region (Dec 2019-Nov 2020)

Skill	Postings	Skill	Postings
Product Design	1,796	Adobe Illustrator	397
Visual Design	1,196	Information Architecture	366
Prototyping	1,086	Typesetting	340
Product Development	1,032	Design Thinking	331
Interaction Design	1,005	Experiments	302
User Research	954	Software as a Service (SaaS)	302
Process Design	827	Project Management	275
UX Wireframes	747	Python	252
Adobe Photoshop	720	Graphic Design	248
Product Management	677	JavaScript	245
Adobe Indesign	446	Data Analysis	244
User Interface (UI) Design	445	Business-to-Business	225
Adobe Acrobat	409	Human Computer Interaction	221
Adobe Creative Suite	405	Usability Testing	221

Source: Burning Glass

Table 10. Certifications for Digital Fabrication Technology Occupations in Bay Region (Dec 2019-Nov 2020)

Skill	Posting	Skill	Posting
Security Clearance	25	American Society For Quality (ASQ) Certification	3
Driver's License	17	Six Sigma Black Belt Certification	2
Board Certified/Board Eligible	12	Architecture License	2
Certified ScrumMaster (CSM)	8	Six Sigma Green Belt Certification	1
Six Sigma Certification	4	Project Management Professional (PMP)	1
Data Center Design Consultant	4	Project Management Certification	1

Skill	Posting	Skill	Posting
Epic Certification	3	Program Management Professional (PgMP)	1
Electric Vehicle Technician (EVT)	3	Lean Six Sigma Certification	1
Certified Reliability Engineer	3	Leadership In Energy And Environmental Design (LEED) Certified	1
Certified Quality Engineer (CQE)	3	Geometric Dimensioning and Tolerancing Professional	1

Source: Burning Glass

Note: 98% 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.

Table 11. Education Requirements for Digital Fabrication Technology Occupations in Bay Region

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	43	2%
Associate's degree	11	1%
Bachelor's degree	1,662	85%
Master's degree	162	8%
Doctoral degree	83	4%

Source: Burning Glass

Note: 53% 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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