

# Digital Fabrication Technology Occupations

# Labor Market Information Report

# Laney College

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

**January 2021**

## 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 |
| 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% |
| 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 |
| 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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