** Mechanical Drafting and Design Occupations**

**Labor Market Information Report**

**Napa Valley 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 a slight undersupply of Mechanical Drafting and Design workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano and Sonoma Counties). The gap is about 114 students annually in the Bay region and 11 students annually in the North Bay sub-region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0953.40 - Mechanical Drafting in the state and region. It is recommended that this 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 Napa Valley College and in the region.

# Introduction

This report profiles Mechanical Drafting and Design Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Napa Valley College.

|  |
| --- |
| * **Mechanical Drafters (SOC 17-3013):** Prepare detailed working diagrams of machinery and mechanicaldevices, including dimensions, fastening methods, and other engineering information.
 |
| *Entry-Level Educational Requirement: Associate's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 61%* |

# Occupational Demand

**Table 1. Employment Outlook for Mechanical Drafting and Design Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Mechanical Drafters | 1,137 | 1,244 | 107  | 9% | 608 | 122 | $19.83  | $30.30  |

*Source: EMSI 2018.4*

**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 Mechanical Drafting and Design Occupations in North Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Mechanical Drafters | 107 | 115 | 9  | 8% | 56 | 11 | $19.56  | $29.10  |

*Source: EMSI 2018.4*

**North Bay Sub-Region** includes Marin, Napa, Solano and Sonoma Counties

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

**Table 3. Number of Job Postings by Occupation for latest 12 months (Nov 2017 - Oct 2018)**

|  |  |  |
| --- | --- | --- |
| Occupation | Bay Region | North Bay |
| Mechanical Drafters | 402 | 36 |

*Source: Burning Glass*

**Table 4. Top Job Titles for Mechanical Drafting and Design Occupations for latest 12 months (Nov 2017 - Oct 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | North Bay | Common Title | Bay | North Bay |
| Mechanical Designer | 104 | 8 | Engineering Drafter | 5 | 2 |
| Drafter | 43 | 3 | Computer Aided Drafting / Design ( Cad ) Operator, Fire Protection | 4 |  |
| Mechanical Draughter | 21 | 1 | Drafting Technician | 4 |  |
| Designer/Drafter | 17 | 3 | Facilities Drafter | 4 |  |
| Piping Designer | 12 | 2 | Junior Designer/Drafter | 4 | 1 |
| Architectural Drafter | 10 | 1 | Architect/Drafter | 3 | 1 |
| Cad Drafter | 10 | 2 | Autocad Draughter | 3 |  |
| Detail | 10 | 1 | Computer Aided Drafting / Design ( Cad ) Designer | 3 |  |
| Drafter/Designer | 9 | 1 | Computer Aided Drafting / Design ( Cad ) Designer, Catia | 3 |  |
| Mechanical Drafter | 8 | 2 | Computer Aided Drafting / Design ( Cad ) Designer, Electrical Engineering | 3 |  |
| Cam Operator | 6 |  | Designer/Architect | 3 |  |
| Solar Drafter | 6 |  | Designer/Draftsman | 3 |  |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Mechanical Drafting and Design Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2017) | Jobs in Industry (2022) | % Change (2017-22) | % in Industry (2017) |
| Engineering Services (541330) | 245 | 247 | 14% | 21.4% |
| Semiconductor Machinery Manufacturing (333242) | 57 | 60 | 14% | 5.2% |
| Architectural Services (541310) | 53 | 54 | 9% | 4.6% |
| Temporary Help Services (561320) | 48 | 48 | 10% | 4.2% |
| Sheet Metal Work Manufacturing (332322) | 43 | 45 | 21% | 3.9% |
| Plumbing, Heating, and Air-Conditioning Contractors (238220) | 44 | 44 | 9% | 3.8% |
| Semiconductor and Related Device Manufacturing (334413) | 26 | 26 |  (8%) | 2.2% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 20 | 21 | 5% | 1.8% |
| Machine Shops (332710) | 20 | 21 | 10% | 1.8% |
| Electronic Computer Manufacturing (334111) | 18 | 18 | 6% | 1.6% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 16 | 17 | 13% | 1.5% |

*Source: EMSI 2018.4*

**Table 6. Top Employers Posting Mechanical Drafting and Design Occupations in Bay and North Bay Sub-Region (Nov 2017 - Oct 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | North Bay |
| Crate & Barrel | 10 | Johnson Controls Incorporated | 3 | L3 Technologies | 3 |
| Rls | 8 | L3 Technologies | 3 | Eichleay | 2 |
| Jacobs Engineering Group Incorporated | 6 | Nelson Group | 3 | Geneva Aerospace Incorporated | 2 |
| Ati Architects Engineers | 5 | Norman Sanchez Architecture | 3 | Bevan Associates | 1 |
| Gast Architects | 5 | Precision Cabinets Trim | 3 | Biomarin Pharmaceutical Incorporated | 1 |
| Richmar Associates Incorporated | 5 | Proterra Group Incorporated | 3 | Crate & Barrel | 1 |
| Solopoint | 5 | Ryzen Solutions | 3 | Design Build | 1 |
| 10X Genomics | 4 | Sanmina Corporation | 3 | Hr Partners | 1 |
| Google Inc. | 4 | Silicon Valley Glass Incorporated | 3 | Integration International Incorporated | 1 |
| Parsons Brinckerhoff | 4 | Sm | 3 | Lucas & Lucas Landscape Architecture | 1 |
| Eichleay | 3 | Solopoint Solutions | 3 | Martin Kobus Home | 1 |
| Harvest Technical | 3 | American Cybersystems | 2 | Meta Design & Manufacturing Inc | 1 |

*Source: Burning Glass*

# Educational Supply

There are two community colleges in the Bay Region issuing 8 awards annually on TOP 0953.40 - Mechanical Drafting. There are no colleges issuing awards on this TOP code in the North Bay sub-region.

**Table 7. Awards on TOP 0953.40 - Mechanical Drafting in the Bay Area**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| DeAnza | Silicon Valley | n/a | 1 | 3 | 4 |
| Evergreen | Silicon Valley | 27 |  |  | 0 |
| Hartnell | Santa Cruz Monterey | 3 |  | 4 | 4 |
| **Total Bay Region** | **30** | **1** | **7** | **8** |
| **Total North Bay Sub-Region** | **0** | **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 awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 122 annual openings for the Mechanical Drafting and Design occupational cluster and 8 annual awards for an annual undersupply of 114. In the North Bay Sub-Region, there is also a slight gap with 11 annual openings and no annual awards, for an annual undersupply of 11.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0953.40 - Mechanical Drafting**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Napa Valley College (All CTE Programs) | State (0953.40) | Bay (0953.40) | North Bay (0953.40) | Napa Valley College (0953.40) |
| % Employed Four Quarters After Exit | 75% | 82% | 69% | 89% | n/a | n/a |
| Median Quarterly Earnings Two Quarters After Exit | $13,996 | $8,712 | $9,023 | $14,173 | n/a | n/a |
| Median % Change in Earnings | 40% | 87% | 65% | 116% | n/a | n/a |
| % of Students Earning a Living Wage | 63% | 65% | 68% | 81% | n/a | n/a |

*Source: Launchboard Pipeline (version available on 11/21/18)*

# Skills, Certifications and Education

**Table 9. Top Skills for Mechanical Drafting and Design Occupations in Bay Region (Nov 2017 - Oct 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| AutoCAD | 156 | Bill of Materials | 28 | Project Design | 19 |
| SolidWorks | 90 | HVAC | 28 | Geometric Dimensioning and Tolerancing (GD&T) | 18 |
| Mechanical Engineering | 85 | Customer Contact | 26 | Architectural Drafting | 17 |
| Revit | 78 | Packaging | 26 | Autodesk | 17 |
| Mechanical Design | 74 | Procurement | 25 | Pro/ENGINEER | 17 |
| Project Management | 53 | Microstation | 23 | CATIA | 16 |
| 3D Modeling / Design | 40 | Plumbing | 23 | Engineering Design | 16 |
| Scheduling | 40 | Adobe Photoshop | 22 | Engineering Design and Installation | 16 |
| Computer Aided Drafting/Design (CAD) | 37 | Engineering Change Orders | 20 | Floor Plans | 16 |
| Schematic Diagrams | 37 | PTC Creo | 20 | Building Design | 15 |
| Calculation | 33 | System Design | 20 | Customer Service | 15 |

*Source: Burning Glass*

**Table 10. Certifications for Mechanical Drafting and Design Occupations in the Bay Region (Nov 2017 - Oct 2018)**

Note: 89% 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.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Driver's License | 10 | Security Clearance | 3 |
| Leadership In Energy And Environmental Design (LEED) Certified | 8 | Cdl Class C | 2 |
| Registered Cardiac Sonographer | 6 | Certified Solid Works | 2 |
| Computer Aided Design (CAD) Certification | 5 | Licensed Professional Engineer | 2 |
| Drafting Certification | 5 | Architecture License | 1 |
| AutoCAD Certification | 4 | Injection Molding Certification | 1 |
| Engineer in Training Certification | 4 | Landscape Architect License | 1 |
| LEED AP | 3 | Plumbing Certification | 1 |

*Source: Burning Glass*

**Table 11. Education Requirements for Mechanical Drafting and Design Occupations in Bay Region**

Note: 48% 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 | 41 (20%) |
| Associate Degree | 57 (27%) |
| Bachelor’s Degree or Higher | 112 (53%) |

*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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