



Labor Market Analysis for Program Recommendation Additive Manufacturing Technology Occupations De Anza 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 Additive Manufacturing Technology workers compared to the demand for this cluster of occupations in the Bay region and in the Silicon Valley sub-region (Santa Clara county). There is a projected annual gap of about 534 students in the Bay region and 226 students in the Silicon Valley Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0956.00 Manufacturing and Industrial Technology 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 De Anza College and in the region.

This report profiles Additive Manufacturing Technology Occupations in the 12 county Bay region and in the Silicon Valley sub-region for a proposed new Additive Manufacturing Technology - 3D Design and Production program at De Anza College.

- **Industrial Engineering Technologists and Technicians (17-3026):** Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.
Entry-Level Educational Requirement: Associate’s degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 51%
- **Computer Numerically Controlled Tool Operators (51-9161):** NA
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: 46%
- **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 Additive Manufacturing Technology 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
Industrial Engineering Technologists and Technicians	1,688	1,798	110	7%	1,002	200	\$28	\$56
Computer Numerically Controlled Tool Operators	2,440	2,406	-33	-1%	1,317	263	\$19	\$46
Computer Numerically Controlled Tool Programmers	614	671	57	9%	404	81	\$36	\$67
Total	4,742	4,875	133	3%	2,723	544		

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 Additive Manufacturing Technology Occupations in Silicon Valley 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
Industrial Engineering Technologists and Technicians	529	567	38	7%	318	64	\$28	\$57
Computer Numerically Controlled Tool Operators	1,268	1,200	-67	-5%	643	129	\$19	\$46
Computer Numerically Controlled Tool Programmers	320	335	14	5%	188	38	\$39	\$71
Total	2,117	2,102	-15	-1%	1,149	231		

Source: EMSI 2021.3

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 (Feb 2021 - Jan 2022)

Occupation	Bay Region	Silicon Valley
Industrial Engineering Technicians	2,824	613
Computer Numerically Controlled Tool Operators	592	301
Computer Numerically Controlled Tool Programmers	348	142

Source: Burning Glass

Table 4a. Top Job Titles for Additive Manufacturing Technology Occupations for latest 12 months (Feb 2021 - Jan 2022) Bay Region

Title	Bay	Title	Bay
Maintenance Technician	560	CNC Operator	46
CNC Programmer	150	Maintenance Associate	38

Title	Bay	Title	Bay
Automotive Maintenance Technician	96	Maintenance Technician I	33
CNC Operator	93	Machine Operator	28
Maintenance Technician III	90	Manufacturing Engineering Technician	27
Maintenance Worker	75	Maintenance Engineer	22
Industrial Maintenance Technician	50	Fleet Maintenance Technician	22
Equipment Maintenance Technician	50	CNC Mill Operator	20
Maintenance Technician II	49	Manufacturing Maintenance Technician	19

Source: Burning Glass

Table 4b. Top Job Titles for Additive Manufacturing Technology Occupations for latest 12 months (Feb 2021 - Jan 2022) Silicon Valley Sub-Region

Title	Silicon Valley	Title	Silicon Valley
Maintenance Technician	106	Cnc Mill Operator	8
Cnc Operator	35	Senior Cnc Programmer	8
Cnc Programmer	32	Cnc Lathe Programmer	7
Automotive Maintenance Technician	24	Equipment Maintenance Engineer	7
Cnc Machine Operator	23	Machine Operator	7
Equipment Maintenance Technician	21	Maintenance & Store Sanitation Team Member	7
Manufacturing Engineering Technician	15	Maintenance Associate	7
General Maintenance Technician	9	Maintenance Technician II	7
Cnc Lathe Setup/Operator	8	Maintenance Worker	7

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Additive Manufacturing Technology 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)
Machine Shops	895	936	5%	19%
Semiconductor and Related Device Manufacturing	407	403	-1%	9%
Semiconductor Machinery Manufacturing	253	295	17%	6%
Electronic Computer Manufacturing	164	181	11%	3%

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)
Surgical and Medical Instrument Manufacturing	152	170	12%	3%
Pharmaceutical Preparation Manufacturing	135	132	-2%	3%
Printed Circuit Assembly (Electronic Assembly) Manufacturing	99	111	12%	2%
Guided Missile and Space Vehicle Manufacturing	94	86	-8%	2%
Automobile Manufacturing	70	114	63%	2%
Other Electronic Component Manufacturing	87	71	-18%	2%

Source: EMSI 2021.3

Table 6. Top Employers Posting Additive Manufacturing Technology Occupations in Bay Region and Silicon Valley Sub-Region (Feb 2021 - Jan 2022)

Employer	Bay	Employer	Silicon Valley
Bridgestone / Firestone	96	Bridgestone / Firestone	24
Tesla	83	Western Digital	22
Amazon	55	TTM Technologies	21
Lucid Motors	35	Whole Foods Market, Inc.	17
Whole Foods Market	34	Danaher Corporation	16
Western Digital	31	Headway Technologies Incorporated	15
Jabil, Inc	28	Goodyear	15
Danaher Corporation	28	Professional Plastics	13
Goodyear	26	Pss	10
Sanmina Corporation	23	CNC Precision Machining	10

Source: Burning Glass

Educational Supply

There are four (4) community colleges in the Bay Region issuing 10 awards on average annually (last 3 years ending 2018-19) on TOP 0956.00 Manufacturing and Industrial Technology. In the Silicon Valley Sub-Region, there is one (1) community college (De Anza) that issued 5 awards on average annually (last 3 years) on this TOP code.

Table 7. Community College Awards on TOP 0956.00 Manufacturing and Industrial Technology in Bay Region

College	Subregion	Associate	Certificate Low	Total
De Anza	Silicon Valley	3	2	5
Diablo Valley	East Bay	1	0	1
San Francisco	Mid-Peninsula	0	3	3

College	Subregion	Associate	Certificate Low	Total
Solano	North Bay	0	1	1
Total		4	6	10

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 labor market gap in the Bay region with 544 annual openings for the Additive Manufacturing Technology occupational cluster and 10 annual (3-year average) awards for an annual undersupply of 534 students. In the Silicon Valley Sub-Region, there is also a gap with 231 annual openings and 5 annual (3-year average) awards for an annual undersupply of 226 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0956.00 Manufacturing and Industrial Technology

Metric Outcomes	Bay All CTE Programs	De Anza All CTE Programs	State 0956.00	Bay 0956.00	Silicon Valley 0956.00	De Anza 0956.00
Students with a Job Closely Related to Their Field of Study	74%	76%	78%	82%	82%	80%
Median Annual Earnings for SWP Exiting Students	\$48,138	\$45,015	\$49,188	\$60,026	\$66,334	\$66,069
Median Change in Earnings for SWP Exiting Students	23%	28%	43%	50%	32%	20%
Exiting Students Who Attained the Living Wage	52.0%	53%	41%	68%	71%	65%

Source: Launchboard Strong Workforce Program Median of 2018-20.

Skills and Education

Table 9. Top Skills for Additive Manufacturing Technology Occupations in Bay Region (Feb 2021 - Jan 2022)

Skill	Posting	Skill	Posting
Repair	2,060	Lathes	271
Computer Numerical Control (CNC)	990	Forklift Operation	269
Predictive / Preventative Maintenance	897	Personal Protective Equipment (PPE)	259
Machining	569	Packaging	244
Cleaning	563	Occupational Health and Safety	229
Machinery	559	Industrial Operations Industry Knowledge	226
Hand Tools	505	Robotics	217

Skill	Posting	Skill	Posting
Equipment Maintenance	456	Machine Operation	215
Schematic Diagrams	449	Customer Service	208
Power Tools	436	Conveyor Systems	207
Scheduling	411	Mastercam	203
Welding	297	Calipers	196
Lifting Ability	280	Hydraulics	184
Electrical Systems	272	Micrometers	175

Source: Burning Glass

Table 10. Education Requirements for Additive Manufacturing Technology Occupations in Bay Region

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	1,621	83%
Associate's degree	156	8%
Bachelor's degree and higher	179	9%

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 CCCCCO 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

For more information, please contact:

- Leila Jamoosian, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), leila@baccc.net
- John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544