** Music Technology Occupations**

**Labor Market Information Report**

**Foothill College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

March 2019

# Recommendation

Based on all available data, there appears to be an undersupply of Music 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 412 students in the Bay region and 94 students in the Silicon Valley Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 1005.00 - Commercial Music 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 Foothill College and in the region.

# Introduction

This report profiles Music Technology Occupations in the 12 county Bay region and in the Silicon Valley sub-region for an existing program at Foothill College related to a K-12 Strong Workforce Grant/ Dual Enrollment Pathway.

|  |
| --- |
| * **Sound Engineering Technicians (SOC 27-4014):** Operate machines and equipment to record, synchronize, mix, or reproduce music, voices, or sound effects in sporting arenas, theater productions, recording studios, or movie and video productions. |
| Entry-Level Educational Requirement: Postsecondary nondegree *award* |
| Training Requirement: Short-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 46% |
|  |
| * **Audio and Video Equipment Technicians** **(SOC 27-4011):** Set up, or set up and operate audio and video equipment including microphones, sound speakers, video screens, projectors, video monitors, recording equipment, connecting wires and cables, sound and mixing boards, and related electronic equipment for concerts, sports events, meetings and conventions, presentations, and news conferences. May also set up and operate associated spotlights and other custom lighting systems. Excludes "Sound Engineering Technicians" (27-4014). |
| Entry-Level Educational Requirement: Postsecondary *nondegree award* |
| Training Requirement: Short-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 46*%* |

# Occupational Demand

**Table 1. Employment Outlook for Music Technology Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Sound Engineering Technicians | 863 | 865 | 2 | 0% | 415 | 83 | $15.13 | $29.35 |
| Audio and Video Equipment Technicians | 3,435 | 3,700 | 265 | 8% | 1,886 | 377 | $15.41 | $22.67 |
| **Total** | **4,299** | **4,565** | **266** | **6%** | **2,301** | **460** | **$15.35** | **$24.01** |

*Source: EMSI 2019.1*

**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 Music Technology Occupations in Silicon Valley Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Sound Engineering Technicians | 96 | 103 | 7 | 8% | 52 | 10 | $19.71 | $33.96 |
| Audio and Video Equipment Technicians | 750 | 818 | 68 | 9% | 419 | 84 | $14.15 | $19.55 |
| **TOTAL** | **846** | **921** | **76** | **9%** | **471** | **94** | **$14.78** | **$21.18** |

*Source: EMSI 2019.1*

**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 (March 2018 - Feb 2019)**

| Occupation | Bay Region | Silicon Valley |
| --- | --- | --- |
| Audio and Video Equipment Technicians | 748 | 232 |
| Sound Engineering Technicians | 327 | 169 |
| **Total** | **1,075** | **401** |

*Source: Burning Glass*

**Table 4. Top Job Titles for Music Technology Occupations for latest 12 months (March 2018 - Feb 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Silicon Valley | Common Title | Bay | Silicon Valley |
| Audio Visual Technician | 278 | 83 | Theater Technician | 12 | 3 |
| Systems Engineer | 33 | 28 | Systems Specialist | 10 | 9 |
| Video Technician | 25 | 5 | Technician | 10 | 3 |
| Director of Event Technology | 23 | 10 | Video Production Specialist | 10 | 3 |
| Technical Lead, Audio Visual | 19 | 0 | Video Specialist | 10 | 5 |
| Engineer | 17 | 8 | Broadcast Engineer | 9 | 0 |
| Field Service Technician | 17 | 5 | Installation Technician | 8 | 2 |
| Hardware Engineer | 17 | 0 | Audio Dsp Engineer | 7 | 0 |
| Android Engineer | 16 | 1 | Sound Engineer | 7 | 1 |
| Firmware Engineer | 16 | 12 | Building Engineer | 6 | 0 |
| Technology Manager | 16 | 4 | Engineer, Test | 6 | 6 |
| Audio Engineer | 13 | 6 | Technical Specialist, Audio Visual | 6 | 1 |
| Production Technician | 13 | 10 | Technical Supervisor, Audio Visual | 6 | 2 |
| Stage Technician | 13 | 2 | Validation Engineer | 6 | 6 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Music Technology 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) |
| Motion Picture and Video Production (512110) | 400 | 400 | 7% | 9.2% |
| Colleges, Universities, and Professional Schools (611310) | 209 | 216 | 15% | 5.0% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 197 | 206 | 32% | 4.7% |
| Colleges, Universities, and Professional Schools (State Government) (902612) | 188 | 195 | 11% | 4.5% |
| Religious Organizations (813110) | 149 | 151 | 5% | 3.5% |
| Independent Artists, Writers, and Performers (711510) | 152 | 143 | (11%) | 3.3% |
| Theater Companies and Dinner Theaters (711110) | 137 | 132 | 4% | 3.1% |
| All Other Consumer Goods Rental (532289) | 125 | 131 | 16% | 3.0% |
| Other Commercial and Industrial Machinery and Equipment Rental and Leasing (532490) | 128 | 130 | 16% | 3.0% |
| Promoters of Performing Arts, Sports, and Similar Events with Facilities (711310) | 111 | 112 | 11% | 2.6% |
| Sound Recording Studios (512240) | 110 | 110 | (5%) | 2.5% |
| Television Broadcasting (515120) | 102 | 103 | 0% | 2.4% |
| Cable and Other Subscription Programming (515210) | 95 | 102 | (1%) | 2.3% |
| Teleproduction and Other Postproduction Services (512191) | 103 | 101 | 1% | 2.3% |
| Colleges, Universities, and Professional Schools (Local Government) (903612) | 103 | 99 | (9%) | 2.3% |
| Custom Computer Programming Services (541511) | 83 | 85 | 17% | 2.0% |
| Temporary Help Services (561320) | 79 | 79 | 9% | 1.8% |
| Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing (532412) | 74 | 77 | 14% | 1.8% |
| Electrical Contractors and Other Wiring Installation Contractors (238210) | 72 | 72 | 11% | 1.7% |

*Source: EMSI 2019.1*

**Table 6. Top Employers Posting Music Technology Occupations in Bay Region and Silicon Valley Sub-Region (March 2018 - Feb 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Silicon Valley |
| Psav | 71 | Chabot Las Positas Community College District | 5 | Apple Inc. | 56 |
| Apple Inc. | 58 | Cynet Systems | 5 | Google Inc. | 19 |
| Psav Presentation Services | 48 | Disney | 5 | Psav | 19 |
| Google Inc. | 21 | Fortinet Incorporated | 5 | Amazon | 15 |
| Outsource | 18 | Freeman | 5 | Psav Presentation Services | 10 |
| Amazon | 17 | Freeman Company | 5 | Amazon Lab126 | 7 |
| Diversified | 14 | Stanford University | 5 | Outsource | 7 |
| Facebook | 13 | Activision | 4 | City Palo Alto | 6 |
| Whitlock | 13 | Allied Digital Services, Llc | 4 | Diversified | 5 |
| Audio Visual Management Solutions | 12 | Audiovisions | 4 | Fortinet Incorporated | 5 |
| Av Services Incorporated | 11 | CBS Broadcasting | 4 | Stanford University | 5 |
| Encore Event Technologies | 11 | California State University | 4 | Whitlock | 5 |
| Amazon Lab126 | 7 | Carney Sandoe Associates | 4 | Excell | 4 |
| Chabot College | 7 | Compass Group Plc United States | 4 | One Workplace | 4 |
| City Palo Alto | 6 | Conference Technologies | 4 | Security Industry Specialists, Inc | 4 |
| Compass Group | 6 | Dublin Unified School District | 4 | Astreya Partners Inc | 3 |
| Avidex | 5 | Excell | 4 | Cadence Design Systems Incorporated | 3 |

*Source: Burning Glass*

# Educational Supply

There are 4 community colleges in the Bay Region issuing 48 awards on average annually (last 3 years) on TOP 1005.00 - Commercial Music. There are no colleges in the Silicon Valley Sub-Region issuing awards on this TOP code.

**Table 7. Awards on TOP 1005.00 - Commercial Music in the Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| Cabrillo | Santa Cruz & Monterey | 75 |  | 2 | 2 |
| Chabot | East Bay | 129 |  |  |  |
| Diablo Valley | East Bay | 366 | 9 | 12 | 21 |
| Foothill | East Bay | 757 | 12 | 3 | 15 |
| Las Positas | East Bay | 17 |  |  |  |
| Los Medanos | East Bay | 191 | 6 | 4 | 10 |
| Marin | North Bay | 44 |  |  |  |
| Napa | North Bay | 22 |  |  |  |
| Ohlone | East Bay | n/a |  |  |  |
| Santa Rosa | North Bay | 161 |  |  |  |
| Solano | North Bay | 38 |  |  |  |
| **Total Bay Region** | | **1,800** | **27** | **21** | **48** |
| **Total Silicon Valley 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 460 annual openings for the Music Technology occupational cluster and 48 annual (3-year average) awards for an annual undersupply of 412 students. In the Silicon Valley Sub-Region, there is also a gap with 94 annual openings and no annual (3-year average) awards, for an annual undersupply of 94 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 1005.00 - Commercial Music**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay  (All CTE Programs) | Foothill College (All CTE Programs) | State (1005.00) | Bay (1005.00) | Silicon Valley (1005.00) | Foothill College (1005.00) |
| % Employed Four Quarters After Exit | 74% | 77% | 63% | 64% | 66% | 66% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $15,310 | $4,540 | $4,867 | $7,083 | $7,083 |
| Median % Change in Earnings | 46% | 82% | 71% | 61% | 13% | 13% |
| % of Students Earning a Living Wage | 63% | 76% | 23% | 29% | 50% | 50% |

*Source: Launchboard Pipeline (version available on 3/21/19)*

# Skills and Education

**Table 9. Top Skills for Music Technology Occupations in Bay Region (March 2018 - Feb 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Video Conferencing | 192 | Python | 85 | Troubleshooting Technical Issues | 60 |
| Customer Service | 184 | Upselling Products and Services | 83 | Multimedia | 55 |
| Digital Signal Processing (DSP) | 144 | Cisco | 82 | Audio mixing | 51 |
| Repair | 143 | Software Issue Resolution | 81 | Debugging | 51 |
| Technical Support | 133 | Broadcast Industry Knowledge | 80 | Event Planning | 51 |
| Audio / Visual Knowledge | 124 | Project Management | 79 | MATLAB | 51 |
| Operations Management | 114 | Linux | 75 | Quality Assurance and Control | 50 |
| Customer Contact | 106 | Satisfaction Failure Correction | 74 | Firmware | 49 |
| Equipment Operation | 103 | Video Production | 73 | System Design | 48 |
| Sales | 101 | Cabling | 72 | Power Tools | 44 |
| Audio Engineering | 94 | Schematic Diagrams | 66 | Test Equipment | 43 |
| Audio Systems | 94 | Wiring | 65 | Prototyping | 42 |
| Scheduling | 90 | Music | 64 | Digital Audio | 41 |
| C++ | 86 | Predictive / Preventative Maintenance | 63 | Hardware Experience | 41 |

*Source: Burning Glass*

**Table 10. Education Requirements for Music Technology 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 | 203 (37%) |
| Associate Degree | 17 (3%) |
| Bachelor’s Degree or Higher | 334 (60%) |

*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

For more information, please contact:

* Doreen O’Donovan, Data Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), [doreen@baccc.net](mailto:doreen@baccc.net) or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, [jcarrese@ccsf.edu](mailto:jcarrese@ccsf.edu) or (415) 267-6544