** Music Technology Occupations**

**Labor Market Information Report**

**San Jose City College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

December 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 408 students in the Bay region and 68 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 San Jose City 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 a proposed new program at San Jose City College.

|  |
| --- |
| * **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% |
| * **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*%* |

# Occupational Demand

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Audio and Video Equipment Technicians | 3,529 | 3,798 | 269 | 8% | 1,927 | 385 | $18.91 | $25.63 |
| Sound Engineering Technicians | 876 | 894 | 18 | 2% | 435 | 87 | $20.60 | $32.49 |
| **Total** | **4,405** | **4,692** | **287** | **7%** | **2,362** | **472** | **$19.25** | **$26.99** |

*Source: EMSI 2019.3*

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Audio and Video Equipment Technicians | 651 | 715 | 64 | 10% | 369 | 74 | $18.39 | $24.19 |
| Sound Engineering Technicians | 119 | 132 | 13 | 11% | 69 | 14 | $30.10 | $36.60 |
| **TOTAL** | **770** | **846** | **77** | **10%** | **438** | **88** | **$20.20** | **$26.11** |

*Source: EMSI 2019.3*

**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 (December 2018 - November 2019)**

| Occupation | Bay Region | Silicon Valley |
| --- | --- | --- |
| Audio and Video Equipment Technicians | 775 | 230 |
| Sound Engineering Technicians | 371 | 172 |
| **Total** | **1,146** | **402** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Music Technology Occupations for latest 12 months (December 2018 - November 2019) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Audio Visual Technician | 294 | Installation Technician | 10 |
| Director of Event Technology | 37 | Field Service Technician | 10 |
| Video Technician | 32 | Video Specialist | 9 |
| Systems Engineer | 27 | Mechanic | 9 |
| Theater Technician | 26 | Sound Engineer | 8 |
| Engineer | 26 | Audio Visual Specialist | 8 |
| Audio Engineer | 25 | Audio Visual Installer | 8 |
| Technology Manager | 20 | Audio Dsp Engineer | 8 |
| Stage Technician | 18 | Video Support Engineer | 7 |
| Event Technician | 16 | Video Engineer | 7 |
| Technical Lead, Audio Visual | 13 | Test Technician | 7 |
| Senior Engineer | 13 | Lead Engineer | 7 |
| Hardware Engineer | 12 | Digital Media Technician | 7 |
| Firmware Engineer | 12 | Desktop Support | 7 |

**Table 4b. Top Job Titles for Music Technology Occupations for latest 12 months (December 2018 - November 2019) Silicon Valley Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Silicon Valley | Common Title | Silicon Valley |
| Audio Visual Technician | 69 | Technology Manager | 5 |
| Systems Engineer | 17 | Instrumentation Engineer | 5 |
| Director of Event Technology | 13 | Installation Technician | 5 |
| Engineer | 12 | Audio Engineer | 5 |
| Video Technician | 11 | Video Installer | 4 |
| Firmware Engineer | 10 | Technical Lead, Audio Visual | 4 |
| Theater Technician | 9 | Senior Engineer | 4 |
| Lead Engineer | 7 | Production Technician | 4 |
| Hardware Engineer | 7 | Algorithm Engineer | 4 |
| Event Technician | 7 | Video Specialist | 3 |
| Audio DSP Engineer | 7 | Video Production Specialist | 3 |
| Applications Engineer | 7 | Video Engineer | 3 |
| Staff Engineer | 6 | Video Analyst | 3 |
| Test Engineer | 5 | Triage Driver/Engineer | 3 |

# Industry Concentration

**Table 5. Industries hiring Music Technology Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2018) | Jobs in Industry (2022) | % Change (2018-22) | % in Industry (2018) |
| Motion Picture and Video Production (512110) | 402 | 423 | 5% | 9% |
| Colleges, Universities, and Professional Schools (611310) | 199 | 228 | 15% | 5% |
| Religious Organizations (813110) | 186 | 195 | 5% | 4% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 185 | 234 | 26% | 4% |
| Colleges, Universities, and Professional Schools (State Government) (902612) | 169 | 181 | 7% | 4% |
| Independent Artists, Writers, and Performers (711510) | 162 | 148 | -9% | 4% |
| Other Commercial and Industrial Machinery and Equipment Rental and Leasing (532490) | 136 | 168 | 24% | 3% |
| All Other Consumer Goods Rental (532289) | 137 | 145 | 6% | 3% |
| Promoters of Performing Arts, Sports, and Similar Events with Facilities (711310) | 124 | 152 | 23% | 3% |
| Sound Recording Studios (512240) | 127 | 125 | -2% | 3% |
| Theater Companies and Dinner Theaters (711110) | 117 | 124 | 6% | 3% |
| Colleges, Universities, and Professional Schools (Local Government) (903612) | 102 | 93 | -9% | 2% |
| Television Broadcasting (515120) | 96 | 98 | 2% | 2% |
| Custom Computer Programming Services (541511) | 93 | 110 | 18% | 2% |
| Teleproduction and Other Postproduction Services (512191) | 96 | 90 | -6% | 2% |
| Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing (532412) | 89 | 99 | 11% | 2% |
| Cable and Other Subscription Programming (515210) | 81 | 76 | -6% | 2% |
| Local Government, Excluding Education and Hospitals (903999) | 75 | 79 | 5% | 2% |
| Electrical Contractors and Other Wiring Installation Contractors (238210) | 75 | 81 | 8% | 2% |
| Temporary Help Services (561320) | 76 | 82 | 8% | 2% |
| Record Production and Distribution (512250) | 60 | 69 | 15% | 2% |
| Other Sound Recording Industries (512290) | 56 | 59 | 5% | 1% |

*Source: EMSI 2019.3*

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Silicon Valley |
| Apple Inc. | 60 | Astreya | 8 | Apple Inc. | 60 |
| Psav Presentation Services | 49 | Quinn Company | 7 | Amazon | 19 |
| Psav | 23 | Herman Integration Services | 7 | Psav Presentation Services | 12 |
| Audio Visual Services Group | 23 | Freeman Company | 7 | Google Inc. | 10 |
| Amazon | 22 | Compass Group Plc United States | 7 | Whitlock | 8 |
| Audio Visual Management Solutions | 20 | Best Buy | 7 | Stanford University | 6 |
| Whitlock | 19 | University Of California Berkeley | 6 | Psav | 6 |
| Facebook | 12 | Stanford University | 6 | Best Buy | 5 |
| Outsource | 11 | Pebble Beach Resorts | 6 | Astreya | 5 |
| Google Inc. | 11 | Palermitano Solutions | 6 | Palermitano Solutions | 4 |
| Encore Event Technologies | 10 | Oakland Museum California | 6 | Outsource | 4 |
| Activision | 10 | Madison Square Garden | 6 | Diversified | 4 |
| Disney | 9 | Freeman | 6 | Audio Visual Services Group | 4 |
| Av Services Incorporated | 9 | Bay Area Children's Theatre | 6 | Lockheed Martin Corporation | 3 |
| Zimory | 8 | US Army | 5 | Home Theater Satellite | 3 |
| Got Light | 8 | Rentex Computer & Audio Visual Rentals | 5 | Guitar Center | 3 |
| Diversified | 8 | Dublin Unified School District | 5 | Compass Group Plc United States | 3 |

*Source: Burning Glass*

# Educational Supply

There are five (5) community colleges in the Bay Region issuing 64 awards on average annually (last 3 years) on TOP 1005.00 - Commercial Music. There are two colleges in the Silicon Valley Sub-Region issuing 20 awards on average annually (last 3 years) on this TOP code.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ units | Certificate Low unit | Total |
| Cabrillo College | Santa Cruz - Monterey | 1 | 0 | 2 | 3 |
| Diablo Valley College | East Bay | 10 | 9 | 0 | 19 |
| Foothill College | Silicon Valley | 11 | 2 | 0 | 13 |
| Los Medanos College | East Bay | 5 | 5 | 12 | 22 |
| West Valley College | Silicon Valley | 0 | 7 | 0 | 7 |
| **Total Bay Region** | | **27** | **23** | **14** | **64** |
| **Total Silicon Valley Sub-Region** | | **11** | **9** | **0** | **20** |

# *Source: Data Mart*

Note: The annual average for awards is 2015-16 to 2017-18.

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 472 annual openings for the Music Technology occupational cluster and 64 annual (3-year average) awards for an annual undersupply of 408 students. In the Silicon Valley Sub-Region, there is also a gap with 88 annual openings and 20 annual (3-year average) awards for an annual undersupply of 68 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) | San Jose City College (All CTE Programs) | State (1005.00) | Bay (1005.00) | Silicon Valley (1005.00) | San Jose City College (1005.00) |
| % Employed Four Quarters After Exit | 74% | 77% | 63% | 64% | 69% | 77% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $9,642 | $4,540 | $4,867 | $11,841 | $9,566 |
| Median % Change in Earnings | 46% | 44% | 71% | 61% | 50% | 44% |
| % of Students Earning a Living Wage | 63% | 61% | 23% | 29% | 65% | 60% |

*Source: Launchboard Pipeline (version available on 12/5/19)*

# Skills, Certifications and Education

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Digital Signal Processing (DSP) | 208 | Project Management | 82 | System Design | 57 |
| Customer Service | 188 | Equipment Operation | 81 | Digital Audio | 56 |
| Technical Support | 176 | Music | 80 | Event Planning | 56 |
| Video Conferencing | 162 | Upselling Products and Services | 76 | Lifting Ability | 54 |
| Repair | 153 | Software Issue Resolution | 74 | Multimedia | 54 |
| Scheduling | 140 | MATLAB | 71 | Debugging | 53 |
| Audio / Visual Knowledge | 137 | Broadcast Industry Knowledge | 69 | Power Tools | 51 |
| C++ | 114 | Cabling | 68 | Linux | 50 |
| Audio Systems | 112 | MacIntosh OS | 68 | Predictive / Preventative Maintenance | 50 |
| Audio Engineering | 102 | Staff Management | 61 | Audio mixing | 49 |
| Customer Contact | 100 | Schematic Diagrams | 60 | Occupational Health and Safety | 49 |
| Operations Management | 90 | Hardware Experience | 58 | Video Production | 49 |
| Cisco | 89 | Satisfaction Failure Correction | 58 | Quality Assurance and Control | 47 |
| Python | 86 | Wiring | 58 | Budgeting | 46 |
| Sales | 84 | Firmware | 57 | Software Engineering | 43 |

*Source: Burning Glass*

**Table 10. Certifications for Music Technology Occupations in Bay Region (December 2018 - November 2019)**

Note: 81% 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 | 181 | Project Management Professional (PMP) | 1 |
| Occupational Safety and Health Administration Certification | 27 | OSHA Safety 10 Hour | 1 |
| Certified Career Development Facilitator | 10 | Microsoft Technology Associate (MTA) | 1 |
| Cisco Certified Network Associate (CCNA) | 5 | Microsoft Certified Desktop Support Technician (Legacy) | 1 |
| Audiovisual (AV) Certification | 5 | Information Technology Certification | 1 |
| Security Clearance | 4 | IT Infrastructure Library (ITIL) Certification | 1 |
| Electronic Technician Certification | 3 | Forklift Operator Certification | 1 |
| Bloodborne Pathogens Certification | 3 | First Aid Cpr Aed | 1 |
| Security Certified Network Specialist | 2 | Cisco Certified Entry Networking Technician (CCENT) | 1 |
| Project Management Certification | 2 | Certified Teacher | 1 |
| Certified A+ Technician | 2 | Certified Crestron Programmer | 1 |
| Public Safety Certificate | 1 | Cdl Class C | 1 |

*Source: Burning Glass*

**Table 11. Education Requirements for Music Technology Occupations in Bay Region**

Note: 49% 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 | Percent 12 Mos. Postings |
| High school or vocational training | 229 | 42% |
| Associate Degree | 31 | 6% |
| Bachelor’s Degree or Higher | 281 | 52% |

*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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