** Architecture Occupations**

**Labor Market Information Report**

**City College of San Francisco**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

February 2020

# Recommendation

Based on all available data, there appears to be an undersupply of Architecture workers compared to the demand for this cluster of occupations in the Bay region and in the Mid-Peninsula sub-region (San Francisco and San Mateo Counties.) There is a projected annual gap of about 1,958 students in the Bay region and 604 students in the Mid-Peninsula Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0201.00 - Architecture and Architectural Technology 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 City College of San Francisco and in the region.

# Introduction

This report profiles Architecture Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for the review of an existing program at City College of San Francisco. Labor market information (LMI) is not available at the eight-digit SOC Code level for Architectural Drafters (17-3011.01), therefore, the data shown in Tables 1 and 2 is for Architectural and Civil Drafters (at the six digit SOC level) and likely overstates demand for Architectural Drafters. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Architectural Drafters (17-3011.01).

|  |
| --- |
| **Architectural and Engineering Managers (SOC 11-9041):** Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields. Excludes “Natural Sciences Managers" (11-9121). |
| Entry-Level Educational Requirement: Bachelor's degree |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 11% |
|  |
| **Architects, Except Landscape and Naval (SOC 17-1011):** Plan and design structures, such as private residences, office buildings, theaters, factories, and other structural property. Excludes “Landscape Architects” (17-1012) and “Marine Engineers and Naval Architects” (17-2121). |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: Internship*/residency* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 6*%* |
|  |
| **Architectural and Civil Drafters (SOC 17-3011):** Prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Use knowledge of building materials, engineering practices, and mathematics to complete drawings. |
| Entry-Level Educational Requirement: Associate's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 60*%* Occupational Demand **Table 1. Employment Outlook for Architecture 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 | | Architectural and Engineering Managers | 12,899 | 13,572 | 674 | 5% | 5,159 | 1,032 | $65.59 | $83.56 | | Architects, Except Landscape and Naval | 6,249 | 6,610 | 361 | 6% | 2,643 | 529 | $29.86 | $43.26 | | Architectural and Civil Drafters | 4,311 | 4,633 | 322 | 7% | 2,191 | 438 | $25.27 | $30.16 | | **Total** | **23,459** | **24,816** | **1,357** | **6%** | **9,993** | **1,999** | **$48.66** | **$63.01** |   *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 Architecture Occupations in Mid-Peninsula 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 | | Architectural and Engineering Managers | 2,910 | 3,192 | 282 | 10% | 1,308 | 262 | $68.97 | $88.73 | | Architects, Except Landscape and Naval | 2,575 | 2,714 | 139 | 5% | 1,060 | 212 | $33.66 | $46.60 | | Architectural and Civil Drafters | 1,432 | 1,511 | 79 | 6% | 693 | 139 | $27.20 | $32.23 | | **TOTAL** | **6,917** | **7,417** | **500** | **7%** | **3,061** | **612** | **$47.18** | **$61.35** |   *Source: EMSI 2019.3*  **Mid-Peninsula Sub-Region** includes San Francisco and San Mateo Counties |
|  |

### Job Postings in Bay Region and Mid-Peninsula Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (January 2019 - December 2019)**

| Occupation | Bay Region | Mid-Peninsula |
| --- | --- | --- |
| Architectural and Engineering Managers | 10,738 | 4,845 |
| Architects, Except Landscape and Naval | 2,665 | 1,125 |
| Architectural Drafters | 71 | 19 |
| Biofuels/Biodiesel Technology and Product Development Managers | 6 | 1 |
| **Total** | **13,480** | **5,990** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Architecture Occupations for latest 12 months (January 2019 - December 2019) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Engineering Manager | 4,970 | Solutions Architect | 73 |
| Director of Engineering | 1,574 | Project Manager | 60 |
| Engineering Project Manager | 438 | Resident Engineer | 58 |
| Project Architect | 412 | Architect/Engineer | 56 |
| Chief Engineer | 411 | Space Planner | 48 |
| Project Engineer | 323 | Engineer/Architect | 46 |
| Architect | 287 | Data Architect | 44 |
| Architectural Project Manager | 231 | Mulesoft Architect | 42 |
| Vice President, Engineering | 215 | Applications Engineer | 38 |
| Senior Project Engineer | 133 | Systems Engineering Manager | 34 |
| Architectural Designer | 124 | Manufacturing Engineer | 33 |
| Head, Engineering | 111 | Devops Engineer | 31 |
| Construction Engineer | 100 | Process Engineer | 29 |
| Software Engineering Manager | 74 | Architectural Captain | 29 |

**Table 4b. Top Job Titles for Architecture Occupations for latest 12 months (January 2019 - December 2019) Mid-Peninsula Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Mid-Peninsula | Common Title | Mid-Peninsula |
| Engineering Manager | 2,485 | Mulesoft Architect | 30 |
| Director of Engineering | 815 | Resident Engineer | 20 |
| Project Architect | 261 | Project Manager | 20 |
| Chief Engineer | 155 | Data Architect | 18 |
| Vice President, Engineering | 140 | Software Engineering Manager | 17 |
| Architectural Project Manager | 127 | Architectural Captain | 17 |
| Architect | 100 | Captain | 15 |
| Project Engineer | 96 | Security Engineer | 14 |
| Head, Engineering | 83 | Recruiting Manager | 13 |
| Engineering Project Manager | 82 | Manufacturing Engineer | 13 |
| Architectural Designer | 59 | Building Engineer | 13 |
| Senior Project Engineer | 45 | Architect/Designer | 13 |
| Solutions Architect | 36 | Landscape Architect | 11 |
| Space Planner | 32 | Junior Architect | 11 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Architecture 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) |
| Architectural Services (541310) | 5,078 | 5,567 | 10% | 22% |
| Engineering Services (541330) | 4,067 | 4,250 | 4% | 17% |
| Electronic Computer Manufacturing (334111) | 1,052 | 1,136 | 8% | 5% |
| Landscape Architectural Services (541320) | 1,026 | 1,012 | -1% | 4% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 915 | 982 | 7% | 4% |
| Semiconductor and Related Device Manufacturing (334413) | 849 | 758 | -11% | 4% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 630 | 644 | 2% | 3% |
| Research and Development in Biotechnology (except Nanobiotechnology) (541714) | 549 | 726 | 32% | 3% |
| Surveying and Mapping (except Geophysical) Services (541370) | 567 | 612 | 8% | 2% |
| Building Inspection Services (541350) | 453 | 545 | 20% | 2% |
| Local Government, Excluding Education and Hospitals (903999) | 397 | 414 | 4% | 2% |
| Custom Computer Programming Services (541511) | 367 | 439 | 20% | 2% |
| Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals (334515) | 260 | 242 | -7% | 1% |

*Source: EMSI 2019.3*

**Table 6. Top Employers Posting Architecture Occupations in Bay Region and Mid-Peninsula Sub-Region (January 2019 - December 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Mid-Peninsula |
| Apple Inc. | 641 | Splunk | 44 | Facebook | 182 |
| Google Inc. | 298 | Dropbox Incorporated | 43 | Uber | 80 |
| Facebook | 204 | Workday, Inc | 42 | Salesforce | 68 |
| Cisco Systems Incorporated | 115 | Gm Cruise Llc | 42 | Twitter | 53 |
| Uber | 109 | Jacobs Engineering Group Incorporated | 40 | Gm Cruise Llc | 42 |
| Lockheed Martin Corporation | 103 | Applied Materials | 40 | Google Inc. | 38 |
| Marriott International Incorporated | 100 | Juul Labs | 39 | Dropbox Incorporated | 34 |
| Vmware Incorporated | 79 | Paypal | 37 | Marriott International Incorporated | 32 |
| Salesforce | 73 | Amazon | 35 | Samsara | 30 |
| Northrop Grumman | 55 | Tjg Civil Engineers And Land Planners | 34 | Juul Labs | 30 |
| Twitter | 53 | Jones Lang Lasalle Incorporated | 33 | Twilio | 28 |
| cbre | 50 | Airbnb | 33 | Airbnb | 28 |
| Western Digital | 50 | Splunk, Inc | 32 | Wework | 26 |
| Jobot | 50 | Autodesk Incorporated | 32 | Jobot | 26 |
| Linkedin Limited | 49 | Ivy Exec | 31 | Yelp | 24 |
| Adobe Systems | 48 | Samsung America, Inc. | 30 | Hashicorp | 24 |
| Intel Corporation | 46 | Samsara | 30 | Cisco Systems Incorporated | 24 |

*Source: Burning Glass*

# Educational Supply

There are eight (8) community colleges in the Bay Region issuing 41 awards on average annually (last 3 years) on TOP 0201.00 - Architecture and Architectural Technology. There are two colleges in the Mid-Peninsula Sub-Region issuing 8 awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 0201.00 - Architecture and Architectural Technology in Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ units | Certificate Low unit | Total |
| Chabot College | East Bay | 7 | 1 |  | 8 |
| City College of San Francisco | Mid-Peninsula | 3 |  |  | 3 |
| College of Marin | North Bay | 1 |  |  | 1 |
| College of San Mateo | Mid-Peninsula | 5 |  |  | 5 |
| Diablo Valley College | East Bay | 12 | 1 |  | 13 |
| Laney College | East Bay | 3 | 2 |  | 5 |
| Santa Rosa Junior College | North Bay | 1 |  |  | 1 |
| West Valley College | Silicon Valley | 1 | 4 |  | 5 |
| **Total Bay Region** | | **33** | **8** | **0** | **41** |
| **Total Mid-Peninsula Sub-Region** | | **8** | **0** | **0** | **8** |

# *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 large labor market gap in the Bay region with 1,999 annual openings for the Architecture occupational cluster and 41 annual (3-year average) awards for an annual undersupply of 1,958 students. In the Mid-Peninsula Sub-Region, there is also a gap with 612 annual openings and 8 annual (3-year average) awards for an annual undersupply of 604 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP TOP 0201.00 - Architecture and Architectural Technology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay  (All CTE Programs) | City College of San Francisco (All CTE Programs) | State (0201.00) | Bay (0201.00) | Mid-Peninsula (0201.00) | City College of San Francisco (0201.00) |
| % Employed Four Quarters After Exit | 74% | 72% | 60% | 63% | 68% | 67% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $10,170 | $9,362 | $14,239 | $12,833 | $12,833 |
| Median % Change in Earnings | 46% | 31% | 71% | n/a | 30% | 29% |
| % of Students Earning a Living Wage | 63% | 65% | 59% | n/a | 56% | 59% |

*Source: Launchboard Pipeline (version available on 1/27/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Architecture Occupations in Bay Region (January 2019 - December 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Engineering Management | 3,795 | Project Planning and Development Skills | 832 | Data Science | 539 |
| Project Management | 3,534 | Machine Learning | 741 | Business Development | 538 |
| Budgeting | 2,509 | Staff Management | 705 | Repair | 536 |
| Scheduling | 2,311 | Software as a Service (SaaS) | 675 | SketchUp | 510 |
| Software Engineering | 1,956 | Customer Contact | 635 | Agile Development | 504 |
| Software Development | 1,697 | JavaScript | 635 | Linux | 499 |
| Product Management | 1,351 | C++ | 625 | Scalability Design | 492 |
| Product Development | 1,347 | DevOps | 616 | Technical Support | 491 |
| Python | 1,306 | Mechanical Engineering | 616 | Big Data | 462 |
| Java | 1,266 | Quality Management | 584 | HVAC | 451 |
| Quality Assurance and Control | 1,087 | Scrum | 583 | Microsoft Project | 442 |
| AutoCAD | 1,062 | Product Sales | 578 | Adobe Photoshop | 438 |
| Revit | 1,027 | Project Architecture | 555 | Plumbing | 434 |
| Program Management | 982 | SQL | 547 | Team Management | 430 |
| Customer Service | 840 | Systems Engineering | 540 | Kubernetes | 428 |

*Source: Burning Glass*

**Table 10. Certifications for Architecture Occupations in Bay Region (January 2019 - December 2019)** Note: 87% 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 |
| Project Management Certification | 342 | IT Infrastructure Library (ITIL) Certification | 53 |
| Driver's License | 270 | American Board for Engineering and Technology (ABET) Accredited | 51 |
| Project Management Professional (PMP) | 214 | Cisco Certified Internetwork Expert (CCIE) | 49 |
| Security Clearance | 191 | Cisco Certified Network Associate (CCNA) | 46 |
| Licensed Professional Engineer | 148 | Cisco Certified Network Professional (CCNP) | 40 |
| Leadership In Energy And Environmental Design (LEED) Certified | 125 | Certified ScrumMaster (CSM) | 26 |
| Architecture License | 120 | American Institute of Certified Planners | 21 |
| LEED AP | 109 | Juniper Networks Certified Internet Expert | 20 |
| National Council of Architectural Registration Boards (NCARB) | 107 | Engineer in Training Certification | 18 |
| Registered Architect | 66 | ITIL Certification | 17 |
| Certified Information Systems Security Professional (CISSP) | 59 | SANS/GIAC Certification | 16 |
| EPA CFC/HCFC Certification | 58 | Certified Information Security Manager (CISM) | 16 |

*Source: Burning Glass*

**Table 11. Education Requirements for Architecture Occupations in Bay Region**

Note: 40% 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 | 4 | 0% |
| Associate Degree | 14 | 0% |
| Bachelor’s Degree or Higher | 7,411 | 100% |

*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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