** Advanced Web Development Occupations**

**Labor Market Information Report**

**City College of San Francisco**

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 Advanced Web Development 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 954 students in the Bay region and 472 students in the Mid-Peninsula Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0708.10 - Computer Networking 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 (CCSF) and in the region.

# Introduction

This report profiles Advanced Web Development Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for the proposed revision to an existing program at City College of San Francisco.

|  |
| --- |
| * **Web Developers (SOC 15-1134):** Design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. May integrate Web sites with other computer applications. May convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content. Excludes “Multimedia Artists and Animators” (27-1014).
 |
| *Entry-Level Educational Requirement: Associate's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 25%* |

# Occupational Demand

**Table 1. Employment Outlook for Advanced Web Development 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 |
| Web Developers | 10,306 | 12,242 | 1,937  | 19% | 5,802 | 1,160 | $20.83  | $38.90  |

*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 Advanced Web Development Occupations in Mid-Peninsula 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 |
| Web Developers | 4,312 | 5,313 | 1,001  | 23% | 2,636 | 527 | $23.13  | $48.17  |

*Source: EMSI 2019.1*

**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 (Feb 2018 - Jan 2018)**

| Occupation | Bay Region | Mid-Peninsula |
| --- | --- | --- |
| Web Developers | 24,615 | 10,967 |

*Source: Burning Glass*

**Table 4. Top Job Titles for Advanced Web Development Occupations for latest 12 months (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Mid-Peninsula | Common Title | Bay | Mid-Peninsula |
| User Experience (UX) Designer | 2,634 | 1,290 | Senior Engineer | 313 | 227 |
| Front End Developer | 1,752 | 675 | Backend Engineer | 311 | 176 |
| Web Developer | 1,564 | 591 | Senior Backend Engineer | 309 | 218 |
| User Interface (UI) Developer | 1,462 | 394 | Java Developer | 291 | 58 |
| Software Development Engineer | 1,199 | 604 | Web Designer | 270 | 127 |
| User Interface (UX)/User Experience (UX) Designer | 1,111 | 470 | Front End Web Developer | 256 | 97 |
| PHP Developer | 1,008 | 276 | Developer | 192 | 43 |
| Front End Engineer | 611 | 318 | Web Applications Developer | 191 | 56 |
| UX Researcher | 449 | 291 | Javascript Developer | 183 | 88 |
| Senior Front End Engineer | 442 | 298 | Back End Engineer | 176 | 62 |
| User Interface (UI) Designer | 417 | 394 | Senior UI Engineer | 173 | 60 |
| Ruby on Rails Developer | 391 | 202 | Web Producer | 155 | 61 |
| Engineer | 375 | 157 | UI Engineer | 153 | 39 |
| Web Engineer | 338 | 176 | Senior Developer | 152 | 77 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Advanced Web Development 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) |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 2,525 | 2,668 | 41% | 25.2% |
| Custom Computer Programming Services (541511) | 2,120 | 2,173 | 13% | 20.5% |
| Computer Systems Design Services (541512) | 1,251 | 1,243 | 7% | 11.7% |
| Data Processing, Hosting, and Related Services (518210) | 364 | 397 | 41% | 3.7% |
| Software Publishers (511210) | 358 | 379 | 27% | 3.6% |
| Other Computer Related Services (541519) | 342 | 347 | 13% | 3.3% |
| Electronic Shopping and Mail-Order Houses (454110) | 206 | 214 | 26% | 2.0% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 197 | 208 | 11% | 2.0% |
| Administrative Management and General Management Consulting Services (541611) | 116 | 122 | 24% | 1.1% |
| Advertising Agencies (541810) | 110 | 110 | 2% | 1.0% |

*Source: EMSI 2019.1*

**Table 6. Top Employers Posting Advanced Web Development Occupations in Bay Region and Mid-Peninsula Sub-Region (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Mid-Peninsula |
| Capital Markets Placement | 643 | Bayone Solutions | 54 | Capital Markets Placement | 160 |
| Apple Inc. | 273 | Oracle | 52 | Facebook | 113 |
| Google Inc. | 150 | Redpoint Ventures | 51 | Amazon | 82 |
| Cisco Systems Incorporated | 131 | Tranzeal, Inc | 51 | Sony Electronics Incorporated | 68 |
| Amazon | 130 | Workday, Inc | 50 | Coinbase | 64 |
| Scoop Technologies | 125 | Salesforce | 47 | JP Morgan Chase Company | 52 |
| Facebook | 120 | Revature | 46 | Scoop Technologies | 51 |
| Microsoft Corporation | 112 | United States Technical Solutions | 46 | Oracle | 46 |
| Paypal | 104 | Xoriant Incorporated | 46 | Salesforce | 46 |
| Redolent, Inc | 93 | Sapvix | 45 | Adobe Systems | 41 |
| Walmart / Sam's | 80 | Tesla Motors | 45 | Fast Forward Accelerate Good | 41 |
| eBay | 70 | Williams-Sonoma | 45 | Gap Inc. | 36 |
| Sony Electronics Incorporated | 69 | Fast Forward Accelerate Good | 43 | Williams-Sonoma | 35 |
| Adobe Systems | 68 | Avesta Computer Services | 41 | Google Inc. | 34 |
| JP Morgan Chase Company | 66 | Osi Engineering, Inc | 41 | Redpoint Ventures | 34 |
| Coinbase | 64 | Sis Systems Integration Solutions, Inc | 40 | Bayone Solutions | 33 |
| SAP | 64 | Alpha Net Consulting Llc | 38 | Cisco Systems Incorporated | 32 |
| IBM | 61 | Flexton Incorporated | 38 | Blackrock Incorporated | 30 |
| Vmware Incorporated | 57 | Red Oak Technologies | 38 | Excell | 29 |
| Infoobjects Inc | 56 | Intelliswift Software | 37 | Microsoft Corporation | 29 |
| Servicenow | 55 | Etouch Systems Corporation | 36 | Macy's | 28 |

*Source: Burning Glass*

# Educational Supply

There are 14 community colleges in the Bay Region issuing 206 awards on average annually (last 3 years) on TOP 0708.10 - Computer Networking. There are two colleges in the Mid-Peninsula Sub-Region issuing 55 awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 0708.10 - Computer Networking in the Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| City College of San Francisco  | Mid Peninsula |  1,289  |  | 50 | 50 |
| College of San Mateo  | Mid Peninsula |  38  |  |  |  |
| Contra Costa College  | East Bay |  216  | 3 | 12 | 15 |
| De Anza College  | Silicon Valley |  151  | 10 | 10 | 19 |
| Diablo Valley College  | East Bay |  167  | 5 | 1 | 6 |
| Foothill College  | Silicon Valley |  n/a  | 1 |  | 1 |
| Gavilan College  | Santa Cruz - Monterey |  24  | 4 | 1 | 5 |
| Las Positas College  | East Bay |  n/a  | 4 | 1 | 5 |
| Los Medanos College  | East Bay |  n/a  | 7 | 8 | 15 |
| Mission College  | Silicon Valley |  230  | 12 | 20 | 32 |
| Monterey Peninsula College  | Santa Cruz - Monterey |  97  |  | 1 | 1 |
| Ohlone College  | East Bay |  495  | 3 | 17 | 20 |
| San Jose City College  | Silicon Valley |  154  | 6 | 7 | 13 |
| Santa Rosa Junior College  | North Bay |  39  |  | 20 | 20 |
| Skyline College  | Mid Peninsula |  n/a  | 4 | 1 | 5 |
| **Total Bay Region** |  **2,900**  |  **58**  |  **148**  |  **206**  |
| **Total Mid-Peninsula Sub-Region** |  **1,327**  |  **4**  |  **51**  |  **55**  |

# *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 large labor market gap in the Bay region with 1,160 annual openings for the Advanced Web Development occupational cluster and 206 annual (3-year average) awards for an annual undersupply of 954 students. In the Mid-Peninsula Sub-Region, there is also a gap with 527 annual openings and 55 annual (3-year average) awards for an annual undersupply of 472 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0708.10 - Computer Networking**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | City College of San Francisco (All CTE Programs) | State (0708.10) | Bay (0708.10) | Mid-Peninsula (0708.10) | City College of San Francisco (0708.10) |
| % Employed Four Quarters After Exit | 74% | 72% | 72% | 74% | 73% | 74% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $10,170 | $11,383 | $13,397 | $12,411 | $12,482 |
| Median % Change in Earnings | 46% | 31% | 40% | 45% | 38% | 38% |
| % of Students Earning a Living Wage | 63% | 65% | 70% | 74% | 70% | 70% |

*Source: Launchboard Pipeline (version available on 2/20/19)*

# Skills and Education

**Table 9. Top Skills for Advanced Web Development Occupations in Bay Region (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| JavaScript | 11,450 | Adobe Photoshop | 2,708 | Syntactically Awesome Style Sheets (SASS) | 1,803 |
| Java | 5,038 | Git | 2,665 | AJAX | 1,749 |
| Web Application Development | 5,032 | Node.js | 2,511 | Ruby on Rails | 1,674 |
| HTML5 | 4,598 | SQL | 2,471 | JavaScript Object Notation (JSON) | 1,668 |
| Web Development | 4,228 | Hypertext Preprocessor (PHP) | 2,462 | Bootstrapping | 1,614 |
| React Javascript | 3,986 | Prototyping | 2,406 | Scrum | 1,497 |
| Software Engineering | 3,943 | Interaction Design | 2,190 | Agile Development | 1,472 |
| AngularJS | 3,823 | Visual Design | 2,177 | Linux | 1,384 |
| Software Development | 3,314 | Product Management | 2,161 | Cross-browser | 1,377 |
| Front-end Development | 3,274 | Unit Testing | 2,152 | Graphic Design | 1,370 |
| CSS | 3,203 | User Research | 2,078 | Human Computer Interaction | 1,334 |
| User Interface (UI) Design | 3,040 | Web Site Design | 2,037 | Quality Assurance and Control | 1,325 |
| jQuery | 2,992 | MySQL | 2,004 | Product Development | 1,312 |
| Python | 2,988 | Object-Oriented Analysis and Design (OOAD) | 1,901 | PostgreSQL | 1,287 |
| UX Wireframes | 2,755 | E-Commerce | 1,841 | NoSQL | 1,225 |

*Source: Burning Glass*

**Table 10. Education Requirements for Advanced Web Development Occupations in Bay Region**

Note: 55% 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 | 136 (1%) |
| Associate Degree | 86 (1%) |
| Bachelor’s Degree or Higher | 10,779 (98%) |

*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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