** Web Full-Stack Developer Occupations**

**Labor Market Information Report**

**Santa Rosa Junior 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 Web Full-Stack Developer workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano and Sonoma Counties.) There is a projected annual gap of about 5,002 students in the Bay region and 181 students in the North Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0614.30 - Website Design and Development 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 Santa Rosa Junior College and in the region.

# Introduction

This report profiles Web Full-Stack Developer Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Santa Rosa Junior College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Web Administrators (15-1199.03), therefore, the data shown in Tables 1 and 2 is for Computer Occupations, All Other (at the six digit SOC level) and likely overstates demand for Web Administrators. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Web Administrators (15-1199.03).

|  |
| --- |
| * **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% |
|  |
| * **Computer Occupations, All Other (SOC 15-1199):** All computer occupations not listed separately. Excludes “Computer and Information Systems Managers” (11-3021), “Computer Hardware Engineers” (17-2061), “Electrical and Electronics Engineers” (17-2070), “Computer Science Teachers, Postsecondary” (25-1021), “Multimedia Artists and Animators” (27-1014), “Graphic Designers” (27-1024), “Computer Operators” (43-9011), and “Computer, Automated Teller, and Office Machine Repairs” (49-2011).
 |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 35*%* |
|  |
| * **Computer Programmers (SOC 15-1131)**: Create, modify, and test the code, forms, and script that allow computer applications to run. Work from specifications drawn up by software developers or other individuals. May assist software developers by analyzing user needs and designing software solutions. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information.
 |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 21*%* |

# Occupational Demand

**Table 1. Employment Outlook for Web Full-Stack Developer 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 |
| Web Developers |  10,785  |  12,579  | 1,794 | 17% |  5,764  |  1,153  | $27.66 | $42.99 |
| Computer Occupations, All Other |  34,144  |  37,249  | 3,105 | 9% |  14,791  |  2,958  | $40.95 | $55.84 |
| Computer Programmers |  11,815  |  12,599  | 784 | 7% |  4,678  |  936  | $38.06 | $49.75 |
| **Total** |  **56,744**  |  **62,426**  | **5,682** | **10%** |  **25,233**  |  **5,047**  | **$37.82** | **$52.13** |

*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 Web Full-Stack Developer Occupations in North Bay 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 |
| Web Developers |  671  |  686  | 14 | 2% |  255  |  51  | $19.81 | $30.08 |
| Computer Occupations, All Other |  1,413  |  1,426  | 13 | 1% |  492  |  98  | $29.46 | $42.54 |
| Computer Programmers |  520  |  487  | -33 | -6% |  157  |  31  | $34.52 | $44.89 |
| **TOTAL** |  **2,605**  |  **2,599**  | **-6** | **0%** |  **904**  |  **181**  | **$27.98** | **$39.80** |

*Source: EMSI 2019.3*

**North Bay Sub-Region** includes Marin, Napa, Solano and Sonoma Counties

### Job Postings in Bay Region and North Bay Sub-Region

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

| Occupation | Bay Region | North Bay |
| --- | --- | --- |
|  Web Developers | 28,956 | 499 |
|  Computer Programmers | 5,641 | 210 |
|  Web Administrators | 376 | 12 |
|  **Total** | **34,973** | **721** |

*Source: Burning Glass*

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

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| User Experience (UX) Designer | 2,890 | Java Developer | 477 |
| User Interface (UI) Developer | 2,258 | Engineer | 395 |
| Front End Developer | 2,200 | Developer | 362 |
| Web Developer | 1,917 | Web Engineer | 353 |
| Software Development Engineer | 1,286 | Ruby on Rails Developer | 319 |
| User Interface (UX)/User Experience (UX) Designer | 1,151 | PHP Developer | 286 |
| Front End Engineer | 723 | Web Designer | 281 |
| Senior Engineer | 620 | Front End Web Developer | 266 |
| User Interface (UI) Designer | 608 | Web Producer | 229 |
| Senior Front End Engineer | 587 | Senior UX Researcher | 221 |
| Ux Researcher | 578 | Frontend Engineer | 214 |
| Backend Engineer | 551 | Javascript Developer | 209 |
| Programmer/Analyst | 544 | Senior Developer | 205 |
| Senior Backend Engineer | 481 | Senior UI Engineer | 189 |

**Table 4b. Top Job Titles for Web Full-Stack Developer Occupations for latest 12 months (January 2019 - December 2019) North Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | North Bay | Common Title | North Bay |
| Web Developer | 65 | Programmer | 12 |
| Front End Developer | 47 | Customer Specialist | 12 |
| Front End Engineer | 41 | Engineer | 10 |
| Programmer/Analyst | 38 | Aws Devops Lead | 9 |
| Backend Engineer | 31 | Web Designer | 8 |
| PHP Developer | 28 | User Experience (UX) Designer | 7 |
| Senior Front End Engineer | 26 | Web Applications Developer | 6 |
| Senior Backend Engineer | 21 | Senior UX Researcher | 6 |
| User Interface (UX)/User Experience (UX) Designer | 20 | SQL Developer | 6 |
| Entry Programmer | 18 | Ruby on Rails Developer | 6 |
| Computer Programmer | 15 | Junior Web Developer | 6 |
| User Interface (UI) Developer | 13 | Javascript Engineer | 6 |
| Aws-Devops Lead | 13 | Front End Web Developer | 6 |
| Software Development Engineer | 12 | Lead Guide | 5 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Web Full-Stack Developer 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) |
| Custom Computer Programming Services (541511) | 12,956 | 15,047 | 16% | 23% |
| Computer Systems Design Services (541512) | 7,596 | 8,323 | 10% | 13% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 5,506 | 6,931 | 26% | 10% |
| Software Publishers (511210) | 4,214 | 5,400 | 28% | 8% |
| Data Processing, Hosting, and Related Services (518210) | 2,392 | 3,081 | 29% | 4% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 2,093 | 2,032 | -3% | 4% |
| Other Computer Related Services (541519) | 1,923 | 2,297 | 19% | 3% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 1,759 | 1,789 | 2% | 3% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 788 | 829 | 5% | 1% |
| Electronic Computer Manufacturing (334111) | 660 | 717 | 9% | 1% |
| Administrative Management and General Management Consulting Services (541611) | 632 | 759 | 20% | 1% |
| Temporary Help Services (561320) | 621 | 628 | 1% | 1% |

*Source: EMSI 2019.4*

**Table 6. Top Employers Posting Web Full-Stack Developer Occupations in Bay Region and North Bay Sub-Region (January 2019 - December 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | North Bay |
| Apple Inc. | 252 | Jobot | 76 | Best Buy | 9 |
| Google Inc. | 195 | JP Morgan Chase Company | 75 | Autodesk Incorporated | 6 |
| Amazon | 178 | Osi Engineering | 74 | Take-Two Interactive | 4 |
| Cisco Systems Inc | 170 | Xoriant Incorporated | 71 | Partnership Healthplan Of California | 4 |
| Facebook | 141 | Bayone Solutions | 67 | Infobahn Softworld Inc | 4 |
| IBM | 123 | Uber | 64 | Hellomd | 4 |
| Wipro | 112 | Splunk | 61 | FIS | 4 |
| Walmart / Sam's | 103 | Systems Integration Solutions | 57 | Sonoma State University | 3 |
| Splunk, Inc | 95 | Osi Engineering, Inc | 52 | Sonic Net | 3 |
| SAP | 93 | Ascent Technology Services | 52 | Six Flags Incorporated | 3 |
| Oracle | 90 | Workday, Inc | 51 | Sanborn Map Company | 3 |
| Vmware Incorporated | 84 | Wells Fargo | 50 | Fair Isaac Corporation | 3 |
| Williams-Sonoma | 83 | Anthem Blue Cross | 50 | Dotsolved Systems, Inc | 3 |
| Salesforce | 83 | Intelliswift Software | 49 | Vip Petcare | 2 |
| NTT Data | 80 | Idc Technologies | 49 | United Technologies Corp | 2 |
| Paypal | 78 | Infoobjects Inc | 48 | US Air Force | 2 |
| Adobe Systems | 78 | Coinbase | 48 | Travis Credit Union | 2 |

*Source: Burning Glass*

# Educational Supply

There are nine (9) community colleges in the Bay Region issuing 45 awards on average annually (last 3 years) on TOP 0614.30 - Website Design and Development. There are no colleges in the North Bay Sub-Region issuing awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 0614.30 - Website Design and Development in Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ units | Certificate Low unit | Total |
| Berkeley City College  | East Bay |  1  |  |  2  |  3  |
| Cabrillo College  | Santa Cruz-Monterey |  6  |  6  |  11  |  23  |
| Cañada College  | Mid-Peninsula |  |  |  4  |  4  |
| City College of San Francisco  | Mid-Peninsula |  |  |  1  |  1  |
| Mission College  | Silicon Valley |  |  5  |  | 5 |
| Ohlone College  | East Bay |  |  |  3  |  3  |
| San Jose City College  | Silicon Valley |  1  |  1  |  | 2 |
| Skyline College  | Mid-Peninsula |  2  |  1  |  | 3 |
| West Valley College | Silicon Valley |   |  1  |   |  1  |
| **Total Bay Region** |  **10**  |  **14**  |  **21**  |  **45**  |
| **Total North Bay Sub-Region** | **0** | **0** | **0** | **0** |

# *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 5,047 annual openings for the Web Full-Stack Developer occupational cluster and 45 annual (3-year average) awards for an annual undersupply of 5,002 students. In the North Bay Sub-Region, there is also a gap with 181 annual openings and no annual (3-year average) awards for an annual undersupply of 181 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0614.30 - Website Design and Development**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Santa Rosa Junior College (All CTE Programs) | State (0614.30) | Bay (0614.30) | North Bay (0614.30) | Santa Rosa Junior College (0614.30) |
| % Employed Four Quarters After Exit | 74% | 76% | 60% | 62% | 64% | 69% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $9,839 | $8,399 | $10,242 | $10,018 | $9,790 |
| Median % Change in Earnings | 46% | 50% | 48% | 47% | 38% | 38% |
| % of Students Earning a Living Wage | 63% | 62% | 53% | 59% | 59% | 64% |

*Source: Launchboard Pipeline (version available on 1/23/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Web Full-Stack Developer Occupations in Bay Region (January 2019 - December 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| JavaScript | 14,630 | Adobe Photoshop | 3,172 | Project Management | 2,091 |
| Java | 8,276 | UX Wireframes | 3,151 | Syntactically Awesome Style Sheets (SASS) | 2,066 |
| React Javascript | 5,715 | jQuery | 3,133 | E-Commerce | 2,055 |
| Web Application Development | 5,513 | Node.js | 3,068 | AJAX | 2,015 |
| HTML5 | 5,346 | Unit Testing | 2,847 | JavaScript Object Notation (JSON) | 2,004 |
| Web Development | 5,298 | User Research | 2,793 | Linux | 1,985 |
| Software Engineering | 5,293 | Product Management | 2,787 | Hypertext Preprocessor (PHP) | 1,971 |
| SQL | 4,938 | Prototyping | 2,696 | Oracle | 1,954 |
| Software Development | 4,813 | Visual Design | 2,619 | Cross-browser | 1,900 |
| AngularJS | 4,561 | Object-Oriented Analysis and Design (OOAD) | 2,454 | Product Development | 1,881 |
| Python | 4,518 | Web Site Design | 2,412 | Quality Assurance and Control | 1,837 |
| Front-end Development | 4,310 | Interaction Design | 2,368 | Scalability Design | 1,815 |
| Git | 3,786 | MySQL | 2,359 | Bootstrapping | 1,778 |
| CSS | 3,654 | Agile Development | 2,132 | Debugging | 1,775 |
| User Interface (UI) Design | 3,341 | Scrum | 2,097 | Ruby on Rails | 1,766 |

*Source: Burning Glass*

**Table 10. Certifications for Web Full-Stack Developer Occupations in Bay Region (January 2019 - December 2019)** Note: 97% 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 |
| Security Clearance | 400 | Certified Scrum Professional (CSP) | 15 |
| Driver's License | 82 | Certified Information Systems Security Professional (CISSP) | 14 |
| Project Management Certification | 77 | Salesforce Developer | 13 |
| IT Infrastructure Library (ITIL) Certification | 59 | Registered Health Information Administrator | 13 |
| Project Management Professional (PMP) | 38 | Certified Salesforce Platform Developer II | 13 |
| Mbe Certified | 28 | SANS/GIAC Certification | 12 |
| CompTIA Linux+ | 24 | Food Handler Certification | 12 |
| Licensed Professional Engineer | 21 | Certified Salesforce Platform Developer | 12 |
| CompTIA Security+ | 21 | Automation Certification | 12 |
| ITIL Certification | 20 | Certified ScrumMaster (CSM) | 11 |
| First Aid Cpr Aed | 16 | Six Sigma Certification | 8 |
| Certified Salesforce Administrator | 16 | SAS Certification | 8 |

*Source: Burning Glass*

**Table 11. Education Requirements for Web Full-Stack Developer Occupations in Bay Region**

Note: 52% 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 | 461 | 3% |
| Associate Degree | 163 | 1% |
| Bachelor’s Degree or Higher | 14,983 | 96% |

*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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