**Web Design and Development Occupations**

**Labor Market Information Report**

**Solano College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

November 2018

# Recommendation

Based on all available data, there appears to be an undersupply of Web Design and Development 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). The gap is about 2,730 students annually in the Bay region and about 250 in the North Bay sub-region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0707.00 - Computer Software Development in the state and region. It is recommended that this 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 Solano College and in the region.

# Introduction

This report profiles Web Design and Development Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Solano College.

|  |
| --- |
| * **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%* |
|  |
| * **Graphic Designers (SOC 27-1024):** Design or create graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.
 |
| *Entry-Level Educational Requirement: Bachelor's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 29%* |
|  |
| * **Multimedia Artists and Animators (SOC 27-1014):** Create special effects, animation, or other visual images using film, video, computers, or other electronic tools and media for use in products or creations, such as computer games, movies, music videos, and commercials.
 |
| *Entry-Level Educational Requirement: Bachelor's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 27%* |
|  |

# Occupational Demand

**Table 1. Employment Outlook for Web Design and Development Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Web Developers | 10,309 | 12,002 | 1,693  | 16% | 5,492 | 1,098 | $19.16  | $39.31  |
| Graphic Designers | 12,684 | 13,058 | 374  | 3% | 6,401 | 1,280 | $16.39  | $23.81  |
| Multimedia Artists and Animators | 4,765 | 5,061 | 296  | 6% | 2,250 | 450 | $13.19  | $37.76  |
| **Total** | **27,758** | **30,121** | **2,363** | **9%** | **14,143** | **2,829** | **$16.87**  | **$31.96**  |

*Source: EMSI 2018.4*

**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 Design and Development Occupations in North Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Web Developers | 672 | 670 | (2) |  (0%) | 235 | 47 | $17.44  | $24.90  |
| Graphic Designers | 1,671 | 1,661 | (10) |  (1%) | 783 | 157 | $15.43  | $20.92  |
| Multimedia Artists and Animators | 657 | 617 | (40) |  (6%) | 252 | 50 | $12.44  | $35.94  |
| **TOTAL** | **3,000** | **2,948** | **(52**) |  **(2%)** | **1,270** | **254** | **$15.23**  | **$25.10**  |

*Source: EMSI 2018.4*

**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 (Oct 2017 - Sept 2018)**

|  |  |  |
| --- | --- | --- |
| Occupation | Bay Region | North Bay |
| Web Developers (15-1134.00) | 19,569 | 443 |
| Graphic Designers (27-1024.00) | 2,830 | 102 |
| Multimedia Artists and Animators (27-1014.00) | 728 | 21 |
| **Total** | **23,127** | **566** |

*Source: Burning Glass*

**Table 4. Top Job Titles for Web Design and Development Occupations for latest 12 months (Oct 2017 - Sept 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | North Bay | Common Title | Bay | North Bay |
| User Experience (UX) Designer | 1,939 | 8 | User Interface (UI) Designer | 270 | 3 |
| Front End Developer | 1,378 | 18 | Senior Engineer | 254 | 9 |
| Web Developer | 1,310 | 23 | Backend Engineer | 242 | 2 |
| Graphic Designer | 1,208 | 54 | Web Designer | 225 | 5 |
| User Interface (UI) Developer | 1,177 | 1 | Java Developer | 219 | 2 |
| Software Development Engineer | 982 | 9 | Front End Web Developer | 212 |  |
| User Interface (UX)/User Experience (UX) Designer | 925 | 63 | Senior Backend Engineer | 198 |  |
| PHP Developer | 924 | 184 | Developer | 172 | 1 |
| Visual Designer | 785 | 4 | Web Applications Developer | 164 | 9 |
| Front End Engineer | 470 | 2 | Production Artist | 162 | 14 |
| Interaction Designer | 447 |  | Javascript Developer | 158 | 1 |
| Senior Front End Engineer | 359 | 4 | Web Producer | 136 | 3 |
| Ruby on Rails Developer | 332 |  | UI Engineer | 121 | 2 |
| Web Engineer | 327 | 1 | Back End Engineer | 120 |  |
| UX Researcher | 298 |  | Senior Developer | 116 |  |
| Engineer | 290 | 3 | Senior UI Engineer | 114 | 1 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Web Design and 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) | 3,693 | 3,787 | 35% | 13.6% |
| Custom Computer Programming Services (541511) | 3,057 | 3,097 | 10% | 11.1% |
| Graphic Design Services (541430) | 2,370 | 2,297 | (11%) | 8.2% |
| Interior Design Services (541410) | 1,898 | 1,912 | 6% | 6.9% |
| Computer Systems Design Services (541512) | 1,802 | 1,791 | 7% | 6.4% |
| Software Publishers (511210) | 1,268 | 1,294 | 18% | 4.6% |
| Advertising Agencies (541810) | 587 | 587 | (1%) | 2.1% |
| Motion Picture and Video Production (512110) | 542 | 535 | (3%) | 1.9% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 512 | 523 | 5% | 1.9% |
| Data Processing, Hosting, and Related Services (518210) | 501 | 522 | 33% | 1.9% |
| Other Computer Related Services (541519) | 475 | 477 | 12% | 1.7% |
| Electronic Shopping and Mail-Order Houses (454110) | 466 | 475 | 21% | 1.7% |
| Other Specialized Design Services (541490) | 417 | 419 | 7% | 1.5% |
| Industrial Design Services (541420) | 398 | 395 | 4% | 1.4% |
| Independent Artists, Writers, and Performers (711510) | 400 | 394 | (5%) | 1.4% |
| Commercial Printing (except Screen and Books) (323111) | 387 | 383 | (17%) | 1.4% |
| Administrative Management and General Management Consulting Services (541611) | 336 | 346 | 20% | 1.2% |
| Public Relations Agencies (541820) | 285 | 285 | 3% | 1.0% |
| Other Scientific and Technical Consulting Services (541690) | 274 | 270 | (4%) | 1.0% |

*Source: EMSI 2018.4*

**Table 6. Top Employers Posting Web Design and Development Occupations in Bay Region and North Bay Sub-Region (Oct 2017 - Sept 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | North Bay |
| Capital Markets Placement | 603 | Sony Electronics Incorporated | 77 | Capital Markets Placement | 156 |
| Apple Inc. | 303 | eBay | 77 | Microsoft Corporation | 33 |
| Google Inc. | 174 | Infoobjects Inc | 72 | Take-Two Interactive | 11 |
| Amazon | 120 | SAP | 67 | Telltale Games | 6 |
| Microsoft Corporation | 114 | Williams-Sonoma | 64 | Xio Inc | 6 |
| Facebook | 111 | Oracle | 63 | Elsa Corporation | 5 |
| Cisco Systems Incorporated | 96 | Vmware Incorporated | 59 | Radiant Logic Incorporated | 5 |
| Paypal | 92 | JP Morgan Chase Company | 58 | Revature | 5 |
| Walmart / Sam's | 85 | United States Technical Solutions | 57 | Telltale, Inc | 5 |
| Redolent, Inc | 78 | Bayone Solutions | 55 | 2K Games | 3 |

*Source: Burning Glass*

# Educational Supply

There are three community colleges in the Bay region issuing 98 awards annually on TOP 0707.00 - Computer Software Development. Solano College is the only college in the North Bay Sub-Region issuing 5 awards annually on this TOP code.

**Table 7. Awards on TOP 0707.00 - Computer Software Development in the Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| **San Francisco** | Mid-Peninsula | 2,136 |  | 2 | 2 |
| **San Mateo** | Mid-Peninsula | 725 | 6 | 85 | 91 |
| **Solano** | North Bay | 1,401 |  | 5 | 5 |
| **Total Bay Region** | **4,262** | **6** | **92** | **98** |
| **Total North Bay Sub-Region** | **1,401** | **0** | **5** | **5** |

# *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 2,829 annual openings for the Web Design and Development occupational cluster and 98 annual awards for an annual undersupply of 2,731. In the North Bay sub-region, there is also a gap with 254 annual openings and 5 annual awards for an annual undersupply of 249.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0707.00 - Computer Software Development**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Solano College (All CTE Programs) | State (TOP 0707.00) | Bay (TOP 0707.00) | North Bay (TOP 0707.00) | Solano College (TOP 0707.00) |
| % Employed Four Quarters After Exit | 75% | 71% | 64% | 66% | 58% | 50% |
| Median Quarterly Earnings Two Quarters After Exit | $13,996 | $7,909 | $12.520 | $13,618 | $8,653 | $8,653 |
| Median % Change in Earnings | 40% | 53% | 48% | 37% | 37% | 37% |
| % of Students Earning a Living Wage | 63% | 49% | 67% | 68% | 55% | 55% |

*Source: Launchboard Pipeline (version available on 10/30/18)*

# Skills, Certifications and Education

**Table 9. Top Skills for Web Design and Development Occupations in Bay Region (Oct 2017 - Sept 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| JavaScript | 9,587 | Adobe Indesign | 2,596 | Product Management | 1,843 |
| Adobe Photoshop | 4,347 | jQuery | 2,556 | Unit Testing | 1,801 |
| Web Application Development | 4,230 | UX Wireframes | 2,458 | User Research | 1,669 |
| Java | 4,099 | Python | 2,404 | Product Development | 1,156 |
| HTML5 | 3,963 | Prototyping | 2,225 | Human Computer Interaction | 1,061 |
| Web Development | 3,543 | Git | 2,213 | Process Design | 1,059 |
| AngularJS | 3,333 | Interaction Design | 2,176 | PostgreSQL | 1,053 |
| Software Engineering | 3,228 | Web Site Design | 2,155 | Ruby | 1,020 |
| React Javascript | 3,083 | Hypertext Preprocessor (PHP) | 2,131 | Debugging | 1,009 |
| Graphic Design | 3,008 | Adobe Illustrator | 2,125 | Extensible Markup Language (XML) | 981 |
| User Interface (UI) Design | 2,872 | Node.js | 2,084 | NoSQL | 968 |
| Visual Design | 2,865 | Adobe Acrobat | 2,064 | Scalability Design | 919 |
| CSS | 2,821 | Adobe Creative Suite | 2,010 | Continuous Integration (CI) | 893 |
| Software Development | 2,704 | SQL | 2,002 | Software as a Service (SaaS) | 890 |
| Front-end Development | 2,637 | E-Commerce | 1,878 | C++ | 884 |

*Source: Burning Glass*

**Table 10. Certifications for Web Design and Development Occupations in the Bay Region (Oct 2017 - Sept 2018)**

Note: 99% of records have been excluded because they do not include a certification. As a result, the chart on Certifications has not been included in this report.

**Table 11. Education Requirements for Web Design and 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 | 162 (2%) |
| Associate Degree | 81 (1%) |
| Bachelor’s Degree or Higher | 10,450 (97%) |

*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 or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544