** Computer Project Management Occupations**

**Labor Market Information Report**

**Las Positas 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 Computer Project Management workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda and Contra Costa Counties). There is a projected annual gap of about 6,193 students in the Bay region and 850 students in the East Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0702.00 - Computer Information Systems 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 Las Positas College and in the region.

# Introduction

This report profiles Computer Project Management Occupations in the 12 county Bay region and in the East Bay sub-region for a proposed new program at Las Positas College.

|  |
| --- |
| * **Computer and Information Systems Managers (SOC 11-3021):** Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming. Excludes “Computer Occupations" (15-1111 through 15-1199).
 |
| Entry-Level Educational Requirement: Bachelor's degree |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 21% |
|  |
| * **Computer Systems Analysts (SOC 15-1121):** Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software.
 |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 21*%* |
|  |
| * **Information Security Analysts (SOC 15-1122):** Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses. Excludes “Computer Network Architects” (15-1143).
 |
| 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 Computer Project Management Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Computer and Information Systems Managers |  32,494  |  36,105  | 3,611 | 11% |  15,818  |  3,164  | $70.26 | $88.21 |
| Computer Systems Analysts |  29,219  |  32,865  | 3,646 | 12% |  13,306  |  2,661  | $43.74 | $55.71 |
| Information Security Analysts |  3,298  |  4,169  | 871 | 26% |  2,073  |  415  | $41.35 | $55.30 |
| **Total** |  **65,012**  |  **73,140**  | **8,127** | **13%** |  **31,197**  |  **6,239**  | **$56.87** | **$71.93** |

*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 Computer Project Management Occupations in East Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Computer and Information Systems Managers |  5,845  |  5,997  | 151 | 3% |  2,278  |  456  | $62.81 | $78.48 |
| Computer Systems Analysts |  5,086  |  5,237  | 151 | 3% |  1,774  |  355  | $39.69 | $49.81 |
| Information Security Analysts |  652  |  749  | 97 | 15% |  325  |  65  | $39.55 | $50.79 |
| **TOTAL** |  **11,584**  |  **11,983**  | **399** | **3%** |  **4,378**  |  **875**  | **$51.35** | **$64.33** |

*Source: EMSI 2019.3*

**East Bay Sub-Region** includes Alameda and Contra Costa Counties

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

**Table 3. Number of Job Postings by Occupation for latest 12 months (December 2018 - November 2019)**

| Occupation | Bay Region | East Bay |
| --- | --- | --- |
|  Computer Systems Analysts | 18,329 | 3,209 |
|  Information Security Analysts | 9,459 | 1,478 |
|  Computer and Information Systems Managers | 2,332 | 334 |
|  Informatics Nurse Specialists | 13 | 2 |
|  **Total** | **30,133** | **5,023** |

*Source: Burning Glass*

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

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Business Systems Analyst | 3,224 | Business Analyst | 299 |
| Security Engineer | 2,130 | Information Technology Business Analyst | 296 |
| Developer | 1,281 | Information Security Engineer | 296 |
| Systems Analyst | 1,035 | Information Technology Consultant | 293 |
| Security Analyst | 773 | Oracle Consultant | 277 |
| Technical Consultant | 621 | Security Consultant | 276 |
| Software Development Engineer | 579 | Network Security Engineer | 272 |
| Security Architect | 437 | Aem Developer | 248 |
| Director of Technology | 372 | Chief Technology Officer | 245 |
| Information Technology Analyst | 371 | Director of Engineering | 241 |
| Director of Information Technology | 365 | Mulesoft Developer | 213 |
| Information Security Analyst | 358 | Oracle Functional Consultant | 194 |
| Technical Analyst | 352 | Information Security Manager | 187 |
| Security Manager | 340 | Cyber Security Engineer | 165 |

**Table 4b. Top Job Titles for Computer Project Management Occupations for latest 12 months (December 2018 - November 2019) East Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | East Bay | Common Title | East Bay |
| Business Systems Analyst | 645 | Cyber Security Threat Analyst | 49 |
| Security Engineer | 268 | Technical Business Analyst | 48 |
| Systems Analyst | 217 | Security Architect | 47 |
| Developer | 202 | Hybris Developer | 46 |
| Security Analyst | 170 | Oracle Consultant | 41 |
| Technical Consultant | 99 | Director of Technology | 41 |
| Information Security Analyst | 88 | Aem Developer | 41 |
| Technical Analyst | 85 | Information Technology Auditor | 39 |
| Information Technology Business Analyst | 78 | Business Analyst | 39 |
| Information Technology Consultant | 68 | Team Lead | 37 |
| Information Technology Analyst | 67 | Mulesoft Developer | 37 |
| Cyber Security Engineer | 60 | Information Technology Security Analyst | 37 |
| Director of Information Technology | 58 | Network Security Engineer | 34 |
| Information Security Engineer | 56 | Chief Technology Officer | 33 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Computer Project Management 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) | 14,156 | 16,461 | 16% | 22% |
| Computer Systems Design Services (541512) | 8,602 | 9,601 | 12% | 13% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 5,353 | 6,834 | 28% | 8% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 3,793 | 4,031 | 6% | 6% |
| Software Publishers (511210) | 3,361 | 4,139 | 23% | 5% |
| Data Processing, Hosting, and Related Services (518210) | 2,724 | 3,602 | 32% | 4% |
| Electronic Computer Manufacturing (334111) | 2,531 | 2,729 | 8% | 4% |
| Other Computer Related Services (541519) | 1,978 | 2,383 | 20% | 3% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 1,132 | 1,221 | 8% | 2% |
| Local Government, Excluding Education and Hospitals (903999) | 1,093 | 1,128 | 3% | 2% |
| Research and Development in Biotechnology (except Nanobiotechnology) (541714) | 635 | 850 | 34% | 1% |
| Administrative Management and General Management Consulting Services (541611) | 647 | 770 | 19% | 1% |

*Source: EMSI 2019.3*

**Table 6. Top Employers Posting Computer Project Management Occupations in Bay Region and East Bay Sub-Region (December 2018 - November 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | East Bay |
| Google Inc. | 300 | Infosys | 95 | Kaiser Permanente | 102 |
| Cisco Systems Incorporated | 246 | Genentech | 80 | Workday, Inc | 84 |
| Accenture | 210 | SAP | 79 | University Of California Berkeley | 65 |
| Deloitte | 187 | University California | 78 | University California | 37 |
| Wells Fargo | 174 | Splunk | 78 | Bio-Rad Laboratories | 33 |
| Apple Inc. | 170 | Pacific Gas and Electric Company | 73 | Pacific Gas and Electric Company | 29 |
| Facebook | 152 | Uber | 71 | Ellie Mae | 29 |
| Wipro | 121 | Republic Bancorp | 70 | NTT Data | 25 |
| Splunk, Inc | 117 | Amazon | 70 | Wells Fargo | 24 |
| Kaiser Permanente | 113 | NTT Data | 67 | University Of California Office Of The President | 24 |
| IBM | 113 | University Of California Berkeley | 65 | Bank of the West | 23 |
| Visa | 112 | Target | 65 | Target | 22 |
| Salesforce | 112 | Microsoft Corporation | 65 | Matchpoint Solutions Incorporated | 22 |
| Palo Alto Networks | 110 | Anthem Blue Cross | 64 | Anthem Blue Cross | 22 |
| Lockheed Martin Corporation | 105 | Oracle | 63 | Lawrence Livermore National Laboratory | 21 |
| Workday, Inc | 100 | Lucile Packard Childrens Hospital | 63 | Delta Dental | 19 |
| Vmware Incorporated | 97 | Xoriant Incorporated | 56 | Uc San Diego | 18 |

*Source: Burning Glass*

# Educational Supply

There are 12 community colleges in the Bay Region issuing 46 awards on average annually (last 3 years) on TOP 0702.00 - Computer Information Systems. There are six colleges in the East Bay Sub-Region issuing 25 awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 0702.00 - Computer Information Systems in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ units | Total |
| Berkeley City College  | East Bay |  1  |  |  1  |
| Chabot College  | East Bay |  2  |  |  2  |
| College of Alameda  | East Bay |  6  |  3  |  9  |
| College of Marin  | North Bay |   |  1  |  1  |
| Evergreen Valley College  | Silicon Valley |  1  |  |  1  |
| Gavilan College  | Santa Cruz - Monterey |  1  |  |  1  |
| Las Positas College  | East Bay |  3  |  |  3  |
| Los Medanos College  | East Bay |  |  1  |  1  |
| Merritt College  | East Bay |  4  |  5  |  9  |
| Mission College  | Silicon Valley |  10  |  1  |  11  |
| Napa Valley College  | North Bay |  3  |  0  |  3  |
| Skyline College  | Mid-Peninsula |  3  |  1  |  4  |
| **Total Bay Region** |  **34** |  **12**  |  **46**  |
| **Total East Bay Sub-Region** |  **16**  |  **9**  |  **25** |

# *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 6,239 annual openings for the Computer Project Management occupational cluster and 46 annual (3-year average) awards for an annual undersupply of 6,193 students. In the East Bay Sub-Region, there is also a gap with 875 annual openings and 25 annual (3-year average) awards for an annual undersupply of 850 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0702.00 - Computer Information Systems**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Las Positas College (All CTE Programs) | State (0702.00) | Bay (0702.00) | East Bay (0702.00) | Las Positas College (0702.00) |
| % Employed Four Quarters After Exit | 74% | 75% | 66% | 67% | 63% | 67% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $10,000 | $7,865 | $9,919 | $7,941 | $8,823 |
| Median % Change in Earnings | 46% | 28% | 45% | 35% | 37% | 74% |
| % of Students Earning a Living Wage | 63% | 64% | 51% | 66% | 55% | 57% |

*Source: Launchboard Pipeline (version available on 11/22/19)*

# Skills, Certifications and Education

**Table 9. Top Skills for Computer Project Management Occupations in Bay Region (December 2018 - November 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| SQL | 4,803 | Customer Service | 2,650 | Data Analysis | 1,421 |
| Project Management | 4,709 | SAP | 2,402 | Scrum | 1,407 |
| Information Security | 4,453 | Software Engineering | 2,342 | Systems Development Life Cycle (SDLC) | 1,354 |
| Business Process | 4,361 | Budgeting | 2,121 | Authentication | 1,334 |
| Java | 4,291 | Salesforce | 1,982 | C++ | 1,332 |
| Python | 4,266 | Enterprise Resource Planning (ERP) | 1,967 | Product Management | 1,235 |
| Oracle | 3,981 | Network Security | 1,777 | Penetration Testing | 1,228 |
| Software Development | 3,893 | Quality Assurance and Control | 1,773 | Project Planning and Development Skills | 1,218 |
| Business Systems Analysis | 3,707 | Software as a Service (SaaS) | 1,687 | Customer Contact | 1,156 |
| Business Systems | 3,502 | Cryptography | 1,624 | Web Application Development | 1,095 |
| Information Systems | 3,086 | Scheduling | 1,545 | Technical Writing / Editing | 1,074 |
| Linux | 2,968 | Technical Support | 1,524 | Process Improvement | 1,070 |
| Systems Analysis | 2,961 | UNIX | 1,471 | Transmission Control Protocol / Internet Protocol (TCP / IP) | 1,057 |
| JavaScript | 2,689 | Change Management | 1,455 | Atlassian JIRA | 1,046 |
| Business Analysis | 2,666 | DevOps | 1,437 | Extensible Markup Language (XML) | 1,045 |

*Source: Burning Glass*

**Table 10. Certifications for Computer Project Management Occupations in Bay Region (December 2018 - November 2019)**

Note: 82% 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 |
| Certified Information Systems Security Professional (CISSP) | 2,444 | Cisco Certified Network Associate (CCNA) | 291 |
| Certified Information Systems Auditor (CISA) | 1,309 | Cisco Certified Security Professional | 252 |
| SANS/GIAC Certification | 1,072 | Cisco Certified Network Professional (CCNP) | 218 |
| Certified Information Security Manager (CISM) | 1,010 | GIAC Security Essentials (GSEC) | 212 |
| IT Infrastructure Library (ITIL) Certification | 608 | Project Management Professional (PMP) | 208 |
| Project Management Certification | 495 | GIAC Certified Intrusion Analyst | 204 |
| Information Systems Certification | 460 | ITIL Certification | 163 |
| Security Clearance | 458 | Cisco Certified Internetwork Expert (CCIE) | 154 |
| Certified in Risk and Information Systems Control | 409 | Systems Security Certified Practitioner (SSCP) | 124 |
| CompTIA Security+ | 341 | GIAC Certified Forensic Analyst | 100 |
| Driver's License | 331 | Certified Ethical Hacker (CEH) | 96 |
| GIAC Certified Incident Handler (GCIH) | 321 | SAP Certification | 95 |

*Source: Burning Glass*

**Table 11. Education Requirements for Computer Project Management Occupations in Bay Region**

Note: 45% 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 | 574 | 4% |
| Associate Degree | 370 | 2% |
| Bachelor’s Degree or Higher | 14,478 | 94% |

*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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