



Computer Project Management Occupations Labor Market Information Report Merritt 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 Merritt 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 Merritt 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 Openings	Average Annual Openings	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 Openings	Average Annual Openings	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)	Merritt 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	\$10,660
Median % Change in Earnings	46%	28%	45%	35%	37%	24%
% of Students Earning a Living Wage	63%	64%	51%	66%	55%	58%

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 CCCCCO Data Mart.

Sources

O*Net Online
 Labor Insight/Jobs (Burning Glass)
 Economic Modeling Specialists International (EMSI)
 CTE LaunchBoard 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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