

# Computer Information Systems Occupations Labor Market Information Report San Jose City 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 a significant undersupply of Computer Information Systems workers compared to the demand for this cluster of occupations in the Bay region and in the Silicon Valley sub-region (Santa Clara County.) There is a projected annual gap of about 12,740 students in the Bay region and 5,259 students in the Silicon Valley 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 San Jose City College and in the region.

## Introduction

This report profiles Computer Information Systems Occupations in the 12 county Bay region and in the Silicon Valley sub-region for a proposed new program at San Jose City College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Information Technology Project Managers (15-1199.09), 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 Information Technology Project Managers. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Information Technology Project Managers (15-1199.09).

- **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 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 User Support Specialists (SOC 15-1151):** Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word

processing, electronic mail, and operating systems. Excludes “Network and Computer Systems Administrators” (15-1142).

Entry-Level Educational Requirement: Some college, no degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 41 %

- **Market Research Analysts and Marketing Specialists (SOC 13-1161):** Research market conditions in local, regional, or national areas, or gather information to determine potential sales of a product or service, or create a marketing campaign. May gather information on competitors, prices, sales, and methods of marketing and distribution.

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 14 %

## Occupational Demand

**Table 1. Employment Outlook for Computer Information Systems Occupations in Bay Region**

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	10% Hourly Wage	Median Hourly Wage
Computer Occupations, All Other	19,731	21,972	2,242	11%	9,101	1,820	\$26.99	\$53.32
Computer and Information Systems Managers	25,897	29,357	3,461	13%	13,343	2,669	\$55.65	\$86.30
Computer User Support Specialists	29,393	34,005	4,612	16%	15,944	3,189	\$20.02	\$32.70
Market Research Analysts and Marketing Specialists	38,559	44,533	5,974	15%	25,484	5,097	\$20.63	\$40.24
<b>Total</b>	<b>113,579</b>	<b>129,868</b>	<b>16,289</b>	<b>14%</b>	<b>63,872</b>	<b>12,774</b>	<b>\$29.56</b>	<b>\$51.06</b>

Source: EMSI 2019.2

**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 Information Systems Occupations in Silicon Valley Sub-Region**

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	10% Hourly Wage	Median Hourly Wage
Computer Occupations, All Other	7,209	7,990	781	11%	3,348	694	\$26.64	\$58.87
Computer and Information Systems Managers	12,049	13,360	1,311	11%	5,978	1,237	\$57.84	\$90.14
Computer User Support Specialists	13,495	15,179	1,683	12%	6,970	1,446	\$20.93	\$35.03
Market Research Analysts and Marketing Specialists	14,140	16,020	1,880	13%	9,171	1,890	\$15.90	\$48.09
<b>TOTAL</b>	<b>46,894</b>	<b>52,548</b>	<b>5,655</b>	<b>12%</b>	<b>25,468</b>	<b>5,266</b>	<b>\$29.77</b>	<b>\$56.79</b>

Source: EMSI 2019.2

**Silicon Valley Sub-Region** includes Santa Clara County

## Job Postings in Bay Region and Silicon Valley Sub-Region

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

Occupation	Bay Region	Silicon Valley
Market Research Analysts and Marketing Specialists	7,031	15,421
Information Technology Project Managers	6,313	15,177
Computer User Support Specialists	5,380	13,840
Computer and Information Systems Managers	1,020	2,076
<b>Total</b>	<b>19,744</b>	<b>46,514</b>

Source: Burning Glass

**Table 4a. Top Job Titles for Computer Information Systems Occupations for latest 12 months (June 2018 - May 2019)  
Bay Region**

Common Title	Bay	Common Title	Bay
Marketing Coordinator	708	Technology Manager	214
Marketing Associate	700	Desktop Support Technician	187
Marketing Specialist	619	Technical Sourcer	176
Technical Project Manager	463	Information Technology Technician	168
Marketing Analyst	440	Technical Support Specialist	166
Information Technology Manager	420	Director of Technology	163
Desktop Support	420	Director of Information Technology	158
Social Media Manager	415	Help Desk Technician	148
Information Technology Project Manager	387	Technical Lead	144
Project Manager	340	Sales Operations Analyst	143
Information Technology Support Specialist	283	Development Associate	139
Technical Support Engineer	282	Chief Technology Officer	135
Scrum Master	226	Information Technology Specialist	131
Marketing Assistant	215	Product Analyst	130

**Table 4b. Top Job Titles for Computer Information Systems Occupations for latest 12 months (June 2018 - May 2019)  
Silicon Valley Sub-Region**

Common Title	Silicon Valley	Common Title	Silicon Valley
Marketing Specialist	1,732	Information Technology Support Specialist	483
Marketing Coordinator	1,494	Technical Support Specialist	441
Marketing Associate	1,313	Help Desk Technician	433
Technical Project Manager	1,101	Information Technology Specialist	426
Information Technology Project Manager	1,050	Information Technology Technician	414
Desktop Support	1,006	Technical Lead	404
Information Technology Manager	928	Technology Manager	397
Project Manager	830	Sales Operations Analyst	358
Technical Support Engineer	801	Director of Information Technology	345
Marketing Analyst	759	Director of Technology	305
Social Media Manager	671	Infrastructure Project Manager	280
Marketing Assistant	603	Technical Sourcer	274
Desktop Support Technician	533	Social Media Specialist	265
Scrum Master	493	Operations Specialist	251

Source: Burning Glass

## Industry Concentration

**Table 5. Industries hiring Computer Information Systems 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)	16,360	18,512	13.2%	14.0%
Internet Publishing and Broadcasting and Web Search Portals (519130)	10,851	14,435	33.0%	9.3%
Computer Systems Design Services (541512)	9,829	10,926	11.2%	8.4%
Software Publishers (511210)	7,784	9,274	19.1%	6.7%
Electronic Computer Manufacturing (334111)	5,960	6,351	6.6%	5.1%
Corporate, Subsidiary, and Regional Managing Offices (551114)	5,461	5,907	8.2%	4.7%
Data Processing, Hosting, and Related Services (518210)	4,096	5,318	29.8%	3.5%
Administrative Management and General Management Consulting Services (541611)	2,584	3,137	21.4%	2.2%
Other Computer Related Services (541519)	2,316	2,742	18.4%	2.0%
Other Scientific and Technical Consulting Services (541690)	1,893	1,798	(5.0%)	1.6%
Federal Government, Civilian, Excluding Postal Service (901199)	1,750	1,729	(1.2%)	1.5%
Colleges, Universities, and Professional Schools (State Government) (902612)	1,736	1,844	6.2%	1.5%
Colleges, Universities, and Professional Schools (611310)	1,628	1,760	8.1%	1.4%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715)	1,359	1,278	(6.0%)	1.2%
Local Government, Excluding Education and Hospitals (903999)	1,264	1,328	5.1%	1.1%
Marketing Consulting Services (541613)	1,215	1,462	20.3%	1.0%
Computer and Computer Peripheral Equipment and Software Merchant Wholesalers (423430)	1,145	1,056	(7.8%)	1.0%

Source: EMSI 2019.2

**Table 6. Top Employers Posting Computer Information Systems Occupations in Bay Region and Silicon Valley Sub-Region (June 2018 - May 2019)**

Employer	Bay	Employer	Bay	Employer	Silicon Valley
Facebook	298	Gilead Sciences	49	Cisco Systems Incorporated	415
Salesforce	166	Best Buy	49	Facebook	373
Walmart / Sam's	136	Williams-Sonoma	48	Google Inc.	288
Gap Inc.	126	Levi Strauss	48	Cynet Systems Inc	263
Accenture	112	Juul Labs	48	Best Buy	261
Uber	92	Capital One	46	Wipro	222
Republic Bancorp	87	Wells Fargo	45	Apple Inc.	200
Deloitte	83	Milestone Technologies	44	IBM	197
Visa	78	Infosys	43	Infosys	177
Milestone Technologies Incorporated	78	Twitter	42	Walmart / Sam's	173
Oracle	74	Genentech	42	Salesforce	173
IBM	65	Wipro	41	Accenture	172
Cisco Systems Incorporated	61	Fountain Group	40	Milestone Technologies Incorporated	152
Google Inc.	57	SAP	39	Gap Inc.	145
Cynet Systems Inc	56	Twilio	36	Deloitte	123
Macy's	55	Splunk	35	Kaiser Permanente	119
Blue Cross Blue Shield of California	52	Sony Electronics Incorporated	35	SAP	108

Source: Burning Glass

## Educational Supply

There are 10 community colleges in the Bay Region issuing 34 awards on average annually (last 3 years) on TOP 0702.00 - Computer Information Systems. There are two colleges in the Silicon Valley Sub-Region issuing 7 awards on average annually (last 3 years) on this TOP code.

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

College	Sub-Region	Headcount	Associates	Certificates	Total
Alameda	East Bay	n/a	4	3	7
Berkeley City College	East Bay	146			
Chabot Hayward	East Bay	221	2		2
Diablo Valley College	East Bay	741			
Evergreen Valley	Silicon Valley	n/a	1		1
Laney College	East Bay	294			
Las Positas	East Bay	368	3		3
Los Medanos	East Bay	n/a		1	1
Marin	North Bay	181	0	1	1
Merritt	East Bay	390	3	3	6
Mission	Silicon Valley	211	6		6
Monterey Peninsula College	Santa Cruz - Monterey	35			
Napa	North Bay	161	3	0	3
San Francisco	Mid-Peninsula	220			
Santa Rosa Junior College	North Bay	77			
Skyline	Mid-Peninsula	n/a	3	1	4
<b>Total Bay Region</b>		<b>3,045</b>	<b>25</b>	<b>9</b>	<b>34</b>
<b>Total Silicon Valley Sub-Region</b>		<b>211</b>	<b>7</b>	<b>0</b>	<b>7</b>

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 12,774 annual openings for the Computer Information Systems occupational cluster and 34 annual (3-year average) awards for an annual undersupply of 12,740 students. In the Silicon Valley Sub-Region, there is also a large gap with 5,266 annual openings and 7 annual (3-year average) awards for an annual undersupply of 5,259 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)	San Jose City College (All CTE Programs)	State (0702.00)	Bay (0702.00)	Silicon Valley (0702.00)	San Jose City College (0702.00)
% Employed Four Quarters After Exit	74%	77%	66%	67%	86%	n/a
Median Quarterly Earnings Two Quarters After Exit	\$10,550	\$9,642	\$7,865	\$9,919	\$10,032	n/a
Median % Change in Earnings	46%	44%	45%	38%	47%	n/a
% of Students Earning a Living Wage	63%	61%	51%	62%	52%	n/a

Source: Launchboard Pipeline (version available on 6/4/19)

## Skills, Certifications and Education

**Table 9. Top Skills for Computer Information Systems Occupations in Bay Region (June 2018 - May 2019)**

Skill	Postings	Skill	Postings	Skill	Postings
Project Management	5,268	Key Performance Indicators (KPIs)	1,186	Sales	945
Marketing	3,827	Product Management	1,173	Oracle	943
Technical Support	3,118	Digital Marketing	1,170	Scrum Master	928
Customer Service	3,057	Help Desk Support	1,139	Java	905
Budgeting	2,753	Software as a Service (SaaS)	1,129	Stakeholder Management	870
Social Media	2,395	Business Development	1,113	Onboarding	862
SQL	1,962	It Support	1,098	Linux	843
Salesforce	1,771	E-Commerce	1,078	Market Strategy	798
Scheduling	1,755	Microsoft Active Directory	1,055	Business-to-Business	783
Scrum	1,609	Quality Assurance and Control	1,048	Product Marketing	779
Software Development	1,523	Printers	1,031	Information Systems	770
Facebook	1,385	Python	1,009	Hardware and Software Installation	749
Atlassian JIRA	1,236	Repair	989	Microsoft Operating Systems	739
Project Planning and Development Skills	1,235	Business Process	972	Product Development	735
Customer Contact	1,208	Adobe Photoshop	965	Instagram	729

Source: Burning Glass

**Table 10. Certifications for Computer Information Systems Occupations in the Bay Region (June 2018 - May 2019)**

Note: 84% 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
Project Management Certification	986	Certified Information Systems Security Professional (CISSP)	107
Project Management Professional (PMP)	659	Apple Certified Macintosh Technician	107
IT Infrastructure Library (ITIL) Certification	476	Microsoft Certified Solutions Associate (MCSA)	85
Certified ScrumMaster (CSM)	441	Certified Public Accountant (CPA)	85
Certified A+ Technician	425	Microsoft Certified Solutions Expert (MCSE)	83
Driver's License	407	Certified Information Systems Auditor (CISA)	83
Microsoft Certified Professional (MCP)	165	PMI Agile Certified Practitioner (PMI-ACP)	63
ITIL Certification	164	Certified Information Security Manager (CISM)	62
CompTIA Network+	152	CompTIA Security+	51
Agile Certification	120	ITIL Foundation	42
Cisco Certified Network Associate (CCNA)	119	Security Clearance	38
Certified Scrum Professional (CSP)	114	Cisco Certified Network Professional (CCNP)	37

Source: Burning Glass

**Table 11. Education Requirements for Computer Information Systems Occupations in Bay Region**

Note: 47% 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	444	4%
Associate Degree	490	5%
Bachelor's Degree or Higher	9,067	91%

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/](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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