Labor Market Analysis for Program Recommendation
Virtual Production Occupations
Ohlone 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 Virtual Production workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda, Contra Costa counties). There is a projected annual gap of about 1,046 students in the Bay region and 206 students in the East Bay Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0614.00 Digital Media programs 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 Ohlone College and in the region.

This report profiles Virtual Production Occupations in the 12 county Bay region and in the East Bay sub-region for a proposed new program at Ohlone College.

- **Web and Digital Interface Designers (15-1255):** Design digital user interfaces or websites. Develop and test layouts, interfaces, functionality, and navigation menus to ensure compatibility and usability across browsers or devices. May use web framework applications as well as client-side code and processes. May evaluate web design following web and accessibility standards, and may analyze web use metrics and optimize websites for marketability and search engine ranking. May design and test interfaces that facilitate the human-computer interaction and maximize the usability of digital devices, websites, and software with a focus on aesthetics and design. May create graphics used in websites and manage website content and links.
    Entry-Level Educational Requirement: Bachelor's degree
    Training Requirement: None
    Percentage of Community College Award Holders or Some Postsecondary Coursework: 25%

- **Special Effects Artists and Animators (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: 26%

- **Media and Communication Workers, All Other (27-3099):** All media and communication workers not listed separately.
    Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Short-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 30%

Occupational Demand
Table 1. Employment Outlook for Virtual Production Occupations in Bay Region

Occupation	2020 Jobs	2025 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Web and Digital Interface Designers	5,870	6,911	1,041	18%	3,388	678	$35	$58
Special Effects Artists and Animators	3,664	2,976	-688	-19%	1,701	340	$27	$46
Media and Communication Workers, All Other	1,632	1,440	-192	-12%	758	152	$29	$39
Total	**11,166**	**11,327**	**161**	**1%**	**5,847**	**1,170**		

Source: EMSI 2022.3

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 Virtual Production Occupations in East Bay Sub-region

Occupation	2020 Jobs	2025 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Web and Digital Interface Designers	1,136	1,266	130	11%	579	116	$26	$48
Special Effects Artists and Animators	664	614	-50	-8%	322	64	$17	$38
Media and Communication Workers, All Other	390	335	-54	-14%	163	33	$26	$34
Total	**2,190**	**2,216**	**26**	**1%**	**1,065**	**213**		

Source: EMSI 2022.3

East Bay Sub-Region includes: Alameda, 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 (Nov. 2021 – Oct. 2022)

Occupation	Bay Region	East Bay
Web Developers	18,804	2,165
Multimedia Artists and Animators	778	80

Source: Burning Glass

**Table 4a. Top Job Titles for Virtual Production Occupations for latest 12 months (Nov. 2021 – Oct. 2022)
Bay Region**

Title	Bay	Title	Bay
Front End Developer	544	Senior Ux Designer	262
Senior Front End Engineer	489	UI/UX Designer	239
Ux Designer	473	Web Developer	237
Backend Engineer	465	UI Developer	210
Front End Engineer	455	Senior UX Researcher	131
Ux Researcher	440	Front End Software Engineer	104
Front End Engineer-Remote Optional	383	Backend Developer	99
Back End Engineer-Remote Optional	376	UI Designer	84
Senior Backend Engineer	346	Frontend Full Stack Engineer	84

Source: Burning Glass

**Table 4b. Top Job Titles for Virtual Production Occupations for latest 12 months (Nov. 2021 – Oct. 2022)
East Bay Sub-Region**

Title	East Bay	Title	East Bay
Back End Engineer-Remote	123	UI Developer	33
Front End Engineer-Remote	116	Ux Researcher	31
Front End Developer	66	Front End Developer – Entry Level	30
Senior Front End Engineer	60	Customer Experience Specialist	25
Front End Engineer	53	UI/UX Designer	22
Senior Backend Engineer	52	Senior Ux Designer	20
Backend Engineer	45	UI/UX Developer	14
Ux Designer	42	Senior Software Engineer, Back End	14
Web Developer	37	Software Engineer, Back End	12

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Virtual Production Workers in Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2020)	Jobs in Industry (2025)	% Change (2020-25)	% Occupation Group in Industry (2020)
Software Publishers	2,084	1,709	-18%	14%
Internet Publishing and Broadcasting and Web Search Portals	1,524	1,773	16%	14%
Custom Computer Programming Services	1,372	1,621	18%	14%
Computer Systems Design Services	746	827	11%	7%
Motion Picture and Video Production	455	348	-24%	3%
Independent Artists, Writers, and Performers	304	294	-3%	3%
Data Processing, Hosting, and Related Services	252	309	23%	2%
Graphic Design Services	237	234	-1%	2%
Other Computer Related Services	212	243	15%	2%
Interior Design Services	200	240	20%	2%

Source: EMSI 2022.3

Table 6. Top Employers Posting Virtual Production Occupations in Bay Region and East Bay Sub-Region (Nov. 2021 – Oct. 2022)

Employer	Bay	Employer	East Bay
Amazon	392	Lucid Motors Inc.	36
Google	294	Workday, Inc.	31
Apple	260	University of California	26
Braintrust Group	254	Tesla	21
Capital One	203	Deloitte	19
Adobe Systems	115	eBay	17

Source: Burning Glass

Educational Supply

There are 10 community colleges in the Bay Region issuing 87 awards on average annually (last 3 years ending 2019-20) on TOP 0614.00 Digital Media. In the East Bay Sub-Region, there are three (3) community colleges that issued five (5) awards on average annually (last 3 years) on this TOP code.

There are three (3) other CTE educational institutions in the Bay Region issuing 37 awards on average annually (last 3 years ending 2019-20) on TOP 0614.00 Digital Media. There is one (1) other CTE educational institution in the East Bay Sub-Region issuing two (2) awards on average annually (last 3 years) on this TOP code.

Table 7a. Community College Awards on TOP 0614.00 Digital Media and CIP 09.0702 in Bay Region

College	Subregion	Associate Degree	High unit Certificate	Low unit Certificate	Total
Berkeley City	East Bay	0	0	2	2
Cabrillo	SC-Monterey	4	2	8	14
Chabot	East Bay	2	0	0	2
Gavilan	Silicon Valley	6	0	1	7
Las Positas	East Bay	1	0	0	1
Mission	Silicon Valley	0	0	1	1
San Francisco	Mid-Peninsula	0	0	33	33
San Jose City	Silicon Valley	2	1	1	4
San Mateo	Mid-Peninsula	16	0	5	21
West Valley	Silicon Valley	0	0	2	2
Total		**31**	**3**	**53**	**87**

Note: The annual average for awards is 2017-18 to 2019-20.

Table 7b. Other CTE Institutions Awards on TOP 0614.00 Digital Media and CIP 09.0702 in Bay Region

College	Subregion	Bachelor's degree	Total
Academy of Art University	Mid-Peninsula	33	33
Cogswell University of Silicon Valley	Silicon Valley	2	2
Holy Names University	East Bay	2	2
Total		**37**	**37**

Note: The annual average for awards is 2017-18 to 2019-20.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,170 annual openings for the Virtual Production occupational cluster and 124 annual (3-year average) awards for an annual undersupply of 1,046 students. In the East Bay Sub-Region, there is also a gap with 213 annual openings and seven (7) annual (3-year average) awards for an annual undersupply of 206 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0614.00 Digital Media

Metric Outcomes	Bay All CTE Programs	Ohlone All CTE Programs	State 0614.00	Bay 0614.00	East Bay 0614.00	Ohlone 0614.00
Students with a Job Closely Related to Their Field of Study	74%	74%	57%	52%	52%	N/A
Median Annual Earnings for SWP Exiting Students	$47,419	$65,374	$25,364	$28,374	$29,392	N/A
Median Change in Earnings for SWP Exiting Students	23%	12%	26%	31%	34%	N/A
Exiting Students Who Attained the Living Wage	52%	69%	32%	27%	28%	N/A

Source: Launchboard Strong Workforce Program Median of 2017 to 2020.

Skills, Certifications and Education

Table 9. Top Skills for Virtual Production Occupations in Bay Region (Nov. 2021 – Oct. 2022)

Skill	Posting	Skill	Posting
Information Security	3,856	Vaccination	950
Python	2,164	Good Clinical Practices (GCP)	933
Linux	1,727	Threat Analysis	910
Network Security	1,670	Customer Service	858
Cryptography	1,340	NIST Cybersecurity Framework	851
Software Development	1,288	DevOps	831
Information Systems	1,286	Kubernetes	767
Penetration Testing	1,168	Risk Assessment	764
Software Engineering	1,141	Risk Management	758
Project Management	1,108	Software as a Service (SaaS)	727
Java	1,073	Vulnerability assessment	725
Threat Modeling	1,060	C++	675
Security Operations	1,053	Transmission Control Protocol/ Internet Protocol (TCP/IP)	666
Authentication	953	SQL	650

Source: Burning Glass

Table 10. Certifications for Virtual Production Occupations in Bay Region (Nov. 2021 – Oct. 2022)

Certification	Posting	Certification	Posting
Certified Information Systems Security Professional (CISSP)	2,091	Security Clearance	201
Certified Information Systems Auditor (CISA)	1,051	GIAC Certified Incident Handler (GCIH)	200
SANS/GIAC Certification	936	Driver's License	188
Certified Information Security Manager (CISM)	871	GIAC Security Essentials Certification	171
Information Systems Certification	500	Cisco Certified Network Professional (CCNP)	149
Cisco Certified Security Professional	358	Project Management Certification	125
CompTIA Security+	347	Systems Security Certified Practitioner (SSCP)	103
Certified in Risk and Information Systems Control	336	AWS Certified Solutions Architect (AWS-CSA)	102
IT Infrastructure Library (ITIL) Certification	247	GIAC Certified Intrusion Analyst	90
Cisco Certified Network Associate (CCNA)	208	Certified Ethical Hacker (CEH)	81

Source: Burning Glass

Note: 65% of records have been excluded because they do not include a certification. As a result, the chart above may not be representative of the full sample.

Table 11. Education Requirements for Virtual Production Occupations in Bay Region

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	445	7%
Associate's degree	169	3%
Bachelor's degree and higher	5,325	90%

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/
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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