User Experience Interactive Design Occupations Labor Market Information Report

Prepared by the San Francisco Bay Center of Excellence
for Labor Market Research
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Recommendation

Since User Experience Interactive Design occupations are an emerging occupational cluster, the data provided in this labor market report may not be sufficient to determine the size of the labor market gap for these occupations. The three Standard Occupational Classification (SOC) codes provided by DVC and used to determine annual openings are probably not capturing the true demand for this emerging cluster. In addition, the existence of current programs to train for this emerging occupational cluster are in their infancy or do not include training for the skill sets required. However, with the five job titles provided by DVC, there is some valuable information contained in this report on occupations, employers, skills and educational level desired from online postings information provided by Burning Glass.

Perhaps the best available indication of the demand for this cluster of occupations is the job postings data in Table 4: "Top Job Titles for Selected SOC Codes for User Experience Interactive Design Occupations", that shows during the past 12 months there were 1,399 job postings for the job title "User Experience (UX) Designer" in the Bay region and 109 for the same job title in the East Bay Sub-Region.

This report has two sections for demand: one with the detailed information for the three SOC codes selected and another for the five job titles indicated. This report does not contain traditional supply information or a gap analysis between demand and supply, since the TOP code selected "Other Media and Communications' (TOP 0699.00) is used for any program that cannot be classified in another TOP06 code.

From the data in this report, it is uncertain what the prospects for students would be without a four-year degree for User Experience Interactive Design occupations in the Bay Region. There is a Bachelor of Science program at Santa Monica College (SMC) in Interaction Design that may teach similar skill sets. There are also articulation agreements with surrounding community colleges and other postsecondary institutions, who offer two-year Graphic Design programs, to feed into the BS program at SMC. DVC may want to consider contacting SMC to learn how they have designed their program and what their student outcomes have been. With the increasing demand for hybrid skill sets by employers, there is a strong case for creating more cross-departmental programs like the one proposed here by Diablo Valley College.

Introduction

Diablo Valley College provided the following information when they submitted their request for LMI information: "Emerging innovations such as mobile apps, smartphones, and connected appliances technology and design continue to converge. There is increasing demand for designers to understand the user and user centered approach. Development of this degree and program would potentially include courses from Art Digital Media, Computer Science, Computer information Systems, and Art and would prepare students pursuing careers in Web Design & Development, User Experience Design (UX), User Interface Design (UI), and Mobile Design & Development. This certificate and degree program would provide students with a strong foundation in the fundamental aspects of web design and mobile design. To develop this program ARTDM would create new curriculum in User Experience Design and Web Production and we would need to upgrade the ATC 108 lab with new hardware and software. ARTDM would plan and develop this program in collaboration with COMSC, CIS, ART."

This report profiles User Experience Interactive Design occupations in the 12 county Bay Region and the East Bay Sub-Region (Alameda and Contra Costa counties) for review of a new proposed program at Diablo Valley College. For demand, there are two sections to the report: one based on the three SOC codes provided and one based on the five job titles given. On the supply side, as of January 2018, there does not appear to be any programs training for this occupational cluster in the region that are issuing two-year degrees or certificates. However, the supply section does include awards and student outcomes for Graphic Art and Design (TOP 1030.00) which may be a program area training students on some of the required skill sets for this job cluster in the region.

1. The **three SOC codes** given to describe the cluster of occupations include:
   a. **Computer Programmers (SOC 15-1131):** Create, modify, and test the code, forms, and script that allow computer applications to run. Work from specifications drawn up by software developers or other individuals. May assist software developers by analyzing user needs and designing software solutions. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information.
      Entry-Level Educational Requirement: Bachelor's Degree
      Training Requirement: None
      Percentage of Community College Award Holders or Some Postsecondary Coursework: 23%

   b. **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.
      Entry-Level Educational Requirement: Associate Degree
      Training Requirement: None
      Percentage of Community College Award Holders or Some Postsecondary Coursework: 26%

   c. **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: 30%

2. The **five job titles** given to describe the cluster of occupations include:
   a. **User Experience Designer (UX)**
   b. **User Interface Designer (UI)**
   c. **Web and Mobile Designer**
   d. **Accessibility Specialist**
   e. **Product Designer**

Demand Part I: Occupational Demand from SOC Codes

Table 1: Employment Outlook for User Experience Interactive Design Occupations in Bay Region

Occupation	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-year Openings	Annual Openings	10% Hrly Wage	Median Hrly Wage
Computer Programmers	17,331	17,925	594	3%	6,394	1,279	$25.88	$47.72
Web Developers	10,899	13,317	2,418	22%	6,504	1,301	$19.32	$39.07
Graphic Designers	12,772	13,389	617	5%	6,684	1,337	$16.05	$23.45
Total	**41,003**	**44,631**	**3,628**	**9%**	**19,582**	**3,916**	**$21.08**	**$37.86**

Source: EMSI 2017.4
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 User Experience Interactive Design Occupations in East Bay Sub-Region

Occupation	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-year Openings	Annual Openings	10% Hrly Wage	Median Hrly Wage

Computer Programmers	3,220	3,249	29	1%	1,109	222	$23.37	$46.76
Web Developers	2,134	2,487	353	17%	1,137	227	$18.21	$28.02
Graphic Designers	3,231	3,389	158	5%	1,673	335	$15.39	$20.74
Total	**8,585**	**9,125**	**540**	**6%**	**3,919**	**784**	**$19.08**	**$32.31**

Source: EMSI 2017.4
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 (Jan 2017 – Dec 2017)

Occupation	Bay Region	East Bay
Web Developers (15-1134)	14,537	1,585
Computer Programmers (15-1131)	3,148	570
Graphic Designers (27-1024)	2,072	276
Total	**19,757**	**2,431**

Source: Burning Glass

Table 4: Top Job Titles for Selected SOC Codes for User Experience Interactive Design Occupations for latest 12 months (Jan 2017–Dec 2017)

Common Title	Bay	East Bay	Common Title	Bay	East Bay
Web Developer	1,418	242	Front End Web Developer	215	44
User Experience (UX) Designer	1,399	109	Web Designer	211	29
Front End Developer	1,199	96	Senior Javascript Engineer	204	70
Graphic Designer	894	151	Ruby on Rails Developer	201	14
User Interface (UI) Developer	834	111	Senior Backend Engineer	195	8
Visual Designer	641	49	Backend Engineer	188	6
User Interface (UX)/User Experience (UX) Designer	464	56	Production Artist	143	22
Programmer/Analyst	462	136	Ux Researcher	141	11
Front End Engineer	407	27	Web Applications Developer	138	20
Software Development Engineer	356	19	Guest Experience Specialist sales Associate	126	46
Web Engineer	339	26	Java Software Developer	121	16
Senior Front End Engineer	295	23	Web Producer	121	7
Senior Frontend Engineer	248	70	Back End Engineer	105	15
User Interface (UI) Designer	229	11	Frontend Engineer	95	4
PHP Developer	218	42	Javascript Developer	94	4

Source: Burning Glass

Industry Concentration
Table 5: Industries hiring Selected SOC Codes for User Experience Interactive Design Occupations in Bay Region

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2016)	Jobs in Industry (2021)	% Change (2016-21)	% in Industry (2016)
Custom Computer Programming Services (541511)	7,989	8,412	5%	19.3%
Computer Systems Design Services (541512)	4,846	5,001	3%	11.5%
Internet Publishing & Broadcasting & Web Search Portals (519130)	4,065	5,344	31%	10.2%
Software Publishers (511210)	2,443	2,879	18%	6.1%
Graphic Design Services (541430)	2,460	2,367	(4%)	5.9%
Interior Design Services (541410)	1,763	1,905	8%	4.3%

Other Computer Related Services (541519)	1,226	1,345	10%	2.9%
Data Processing, Hosting, and Related Services (518210)	1,011	1,370	36%	2.6%
Corporate, Subsidiary, and Regional Managing Offices (551114)	816	842	3%	2.0%
Electronic Shopping and Mail-Order Houses (454110)	600	818	36%	1.5%
Advertising Agencies (541810)	576	621	8%	1.4%

Source: EMSI 2017.4

Table 6a: Top Employers Posting User Experience Interactive Design Occupations in Bay Region for latest 12 months (Jan 2017 – Dec 2017)

Note: 44% of records have been excluded because they do not include an employer. As a result, the chart below may not be representative of the full sample.

Employer	Bay	Employer	Bay	Employer	Bay	Employer	Bay
Apple Inc.	297	Walmart / Sam's	62	Machine Zone	41	JP Morgan Chase Co.	30
Petco	146	Khosla Ventures	59	UC San Diego	40	Schlumberger	30
Google Inc.	122	Williams-Sonoma	53	SAP	39	Wells Fargo	30
Amazon.com	118	eBay	53	Okaya Infocom	37	Ellie Mae	29
Accenture	94	Xoriant Inc	51	Uber Technologies Inc	36	Etouch Systems Corp	29
Oracle	89	Gaikai Inc	49	Avesta Computer Srvcs	34	Gap Inc.	29
Cisco Systems Inc	85	Intel Corporation	48	Infobahn Softworld Inc	34	Macy's	29
Infoobjects Inc	85	University of CA	47	The Armada Group	34	Capital One	28
Hired	81	Autodesk Inc	46	First Tek	33	Embedded Resource Group	28
Salesforce.Com	73	Redolent, Inc	46	US Technical Solutions	32	K Anand Corporation	28
Facebook	64	Tesla Motors	43	Intuit	31	Softtech Vc	28
Paypal	62	Bayone Solutions	41	California Interviews	30	The Sage Group Inc	28

Source: Burning Glass

Table 6b: Top Employers Posting User Experience Interactive Design Occupations in East Bay Sub-Region for latest 12 months (Jan 2017 – Dec 2017)

Note: 46% of records have been excluded because they do not include an employer. As a result, the chart below may not be representative of the full sample.

Employer	East Bay	Employer	East Bay	Employer	East Bay
Petco	53	University of California	18	Tesla Motors	14
Uc San Diego	40	Safeway Incorporated	17	Logitech	13
Ellie Mae	29	University Of California	17	Etouch Systems Corporation	12
Hired	24	East Bay Municipal Utility District	16	UC Berkeley	11
Lawrence Livermore Lab	24	Schlumberger	15	Best Buy	10
Accenture	22	Veeva Systems	15	General Electric Company	9
Realogy Services Group Llc	22	Kaiser Permanente	14	Halcyon Solutions Inc	9
Realogy Holdings Corp	21	Oracle	14	Realogy Franchise Group LLC	9

Source: Burning Glass

Skill & Certifications

Table 7: Top Skills for SOC Codes Selected for User Experience Interactive Design Occupations in Bay Region (Jan 2017 – Dec 2017)

Skill	Latest 12 Mos. Postings	Skill	Latest 12 Mos. Postings	Skill	Latest 12 Mos. Postings
JavaScript	7,637	Hypertext Preprocessor (PHP)	1,347	Information Architecture	612
HTML5	3,631	Prototyping	1,300	Data Structures	579
JAVA	3,567	Object-Oriented Analysis and Design (OOAD)	1,283	Software Architecture	566

Adobe Photoshop	3,124	LINUX	1,114	Software as a Service (SaaS)	551
Web Development	2,938	MySQL	1,100	.NET Programming	521
CSS	2,703	Interaction Design	1,065	Microsoft Office	520
Software Development	2,638	JSON	1,065	Customer Service	515
Web Application Development	2,623	E-Commerce	1,032	Microsoft Excel	510
jQuery	2,442	Agile Development	989	Apache Subversion (SVN)	507
Software Engineering	2,318	Debugging	949	Apache Webserver	507
Git	2,291	C++	928	Version Control	493
AngularJS	2,131	Oracle	927	Psychology	470
Python	2,101	Scrum	923	Budgeting	469
Front-end Development	2,078	Optimization	889	Product Design	462
SQL	2,064	Ruby on Rails	880	Microsoft Powerpoint	452
User Interface (UI) Design	1,901	Product Development	850	Big Data	451
Graphic Design	1,878	Extensible Markup Language (XML)	844	Data Management	449
Visual Design	1,864	Ruby	805	MongoDB	447
Adobe Indesign	1,831	Typesetting	789	Atlassian JIRA	424
Adobe Illustrator	1,725	UNIX	756	PERL	418
Web Site Design	1,556	Relational Databases	726	Django	409
UX Wireframes	1,449	Process Design	723	Social Media	405
Product Management	1,429	Human Computer Interaction	709	Usability Testing	401
Project Management	1,417	NoSQL	684	Java Server Pages (JSP)	395
AJAX	1,412	Redux	672	Frontend Technology	394
Adobe Acrobat	1,407	Microsoft C#	658	Customer Contact	389
Node.js	1,399	Backbone.js	647	Content Management	384
Adobe Creative Suite	1,375	Scheduling	627	Website Production	381

Source: Burning Glass

Table 8: Certifications for Selected SOC Codes for User Experience Interactive Design Occupations in the Bay Region

Note: 99% of records have been excluded because they do not include a certification. As a result, the table is not included.

Table 9: Education Requirements for User Experience Interactive Design Occupations in Bay Region

Note: 54% 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	% of Total Indicating Ed. Level
High school or vocational training	348	4%
Associate Degree	140	2%
Bachelor's Degree or Higher	7,577	95%

Source: Burning Glass

Demand Part 2: Occupational Demand for User Experience Interactive Design Job Titles

The **five job titles** given to describe the cluster of occupations include:
1. **User Experience Designer (UX)**
2. **User Interface Designer (UI)**
3. **Web and Mobile Designer**
4. **Accessibility Specialist**
5. **Product Designer**

Job Postings in Bay Region and East Bay Sub-Region for Use Experience Interactive Design Job Titles

Table 10: Number of Job Postings by Occupation for latest 12 months (Jan 2017 – Dec 2017)

Occupation	Bay Region	East Bay
Web Developers (15-1134.00)	3,099	335
Commercial and Industrial Designers (27-1021.00)	966	50
Software Developers, Applications (15-1132.00)	100	11
Graphic Designers (27-1024.00)	54	6
Education Administrators, Elementary & Secondary School (11-9032.00)	25	1
Total	**4,380**	**420**

Source: Burning Glass

Table 11: Top Job Titles for User Experience Interactive Design Occupations in Bay Region and East Bay Sub-Region for latest 12 months (Jan 2017 – Dec 2017)

Common Title	Bay	East Bay	Common Title	Bay	East Bay
User Experience (UX) Designer	1,428	109	Web User Interface (UI) Developer	36	3
Product Designer	1,002	52	Visual Designer	29	1
User Interface (UI) Developer	901	117	Graphic Designer	23	4
User Interface (UX)/User Experience (UX) Designer	492	60	User Interface (UI) Designer	22	4
Web Designer	224	34	Interaction Designer	19	1
User Interface (UX)/User Experience (UX) Developer	87	10	Web Developer	10	0
Web Designer/Developer	37	15	Instructional Designer	7	2

Source: Burning Glass

Industry Concentration

Table 12: Industries hiring for User Experience Interactive Design Occupations in Bay Region from Job Postings

Note: 68% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Industry – 4 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry	% of Total
Software Publishers (5112)	225	16.1%
Computer Systems Design and Related Services (5415)	102	7.3%
Other Information Services (5191)	83	6.0%
Electronic Shopping and Mail-Order Houses (4541)	82	5.9%
Insurance Carriers (5241)	67	4.8%
Specialized Design Services (5414)	63	4.5%
Advertising, Public Relations, and Related Services (5418)	53	3.8%
Depository Credit Intermediation (5221)	49	3.5%
Management, Scientific, and Technical Consulting Services (5416)	49	3.5%
Other Financial Investment Activities (5239)	45	3.2%
Home Furnishings Stores (4422)	43	3.1%
Nondepository Credit Intermediation (5222)	36	2.6%

Source: Burning Glass

Table 13a: Top Employers Posting User Experience Interactive Design Occupations in Bay Region for latest 12 months (Jan 2017 – Dec 2017)

Employer	Bay	Employer	Bay	Employer	Bay	Employer	Bay
Amazon.com	52	Facebook	34	Sony Electronics Inc	21	Infoobjects Inc	12
Williams-Sonoma	43	Khosla Ventures	27	Visa	19	JP Morgan Chase Co	12

Apple Inc.	41	Oracle	26	Xoriant Incorporated	17	Vmware	12
Gaikai Inc	41	Accenture	25	Servicenow	16	Macy's	11
Cisco Systems Inc	38	Bayone Solutions	24	Uber Technologies Inc	16	Rtx141F45	11
Salesforce.Com	38	eBay	24	Autodesk Inc	12	Softtech Vc	11

Source: Burning Glass

Table 13b: Top Employers Posting User Experience Interactive Design Occupations in East Bay Sub-Region for latest 12 months (Jan 2017 – Dec 2017)

Note: 42% of records have been excluded because they do not include an employer. As a result, the chart below may not be representative of the full sample.

Employer	East Bay	Employer	East Bay	Employer	East Bay
Realogy Services Group Llc	10	Ellie Mae	7	Pandora Media, Inc	5
Veeva Systems	10	Safeway Inc	6	Schlumberger	5
Realogy Holdings Corp	9	Servicemax Inc	6	Workday, Inc	5
Accenture	8	Pandora	5	Kaiser Permanente	4

Source: Burning Glass

Skill & Certifications

Table 14: Top Skills for User Experience Interactive Design Occupations in Bay Region (Jan 2017 – Dec 2017)

Skill	Latest 12 Mos. Postings	Skill	Latest 12 Mos. Postings	Skill	Latest 12 Mos. Postings
JavaScript	1,326	Product Design	487	Agile Development	231
Adobe Photoshop	1,304	Graphic Design	460	AJAX	216
UX Wireframes	1,190	Web Application Development	426	JSON	179
Visual Design	1,101	Human Computer Interaction	386	Software as a Service (SaaS)	179
Prototyping	1,040	Software Development	384	Rapid Prototyping	176
Interaction Design	963	Product Development	371	Scrum	161
User Interface (UI) Design	914	JAVA	337	Industrial Engineering Industry Expertise	159
Adobe Indesign	827	AngularJS	324	Industrial Design	153
Adobe Illustrator	769	Project Management	310	Object-Oriented Analysis and Design (OOAD)	151
HTML5	664	Software Engineering	299	Graphical User Interface (GUI)	145
Adobe Acrobat	655	Web Development	283	Interface Design	139
Adobe Creative Suite	654	Front-end Development	279	Project Design	134
Product Management	624	E-Commerce	269	Application Design	128
Process Design	593	Typesetting	265	Node.js	124
Web Site Design	575	Git	249	Interactive Design	123
CSS	488	Usability Testing	248	Customer Contact	122

Source: Burning Glass

Table 15: Education Requirements for User Experience Interactive Design Occupations in Bay Region

Note: 58% 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	% of Total Indicating Ed. Level
High school or vocational training	23	1%
Associate Degree	9	1%
Bachelor's Degree or Higher	1,792	98%

Source: Burning Glass

Educational Supply

The proposed TOP code for this program is "Other Media and Communications" (TOP 0699.00). Only San Jose City College awards degrees or certificates on that TOP code in the Bay Region. According to COCI, the program title is Media Arts. Other programs at community colleges or other postsecondary educational institutes are not showing up.

However, there are programs on Graphic Art and Design (TOP 1030.00) that may be training students on some of the required skill sets for this occupational cluster or that could serve as potential feeder schools into a User Experience Interactive Design program at DVC. The table below details these regional programs.

Table 16: Graphic Art and Design Programs on TOP 1030.00 - Graphic Art and Design or CIP 50.0409 - Graphic Design in the Bay Region

College	Sub-Region	CC Headcount	No of Transfer Students	Associate Degrees	Certificates or Other Credit Awards	Total Awards
DeAnza	Silicon Valley	253	22	11	15	26
Diablo Valley	East Bay	on another TOP	0	3	0	3
Evergreen	Silicon Valley	47	4	0	0	0
Foothill	Silicon Valley	626	18	11	3	14
Laney	East Bay	256	6	5	2	7
Las Positas	East Bay	99	2	0	0	0
Los Medanos	East Bay	223	11	7	1	8
Mission	Silicon Valley	342	14	7	2	9
Monterey	SC & Monterey	119	6	6	3	9
Napa	North Bay	113	3	2	0	2
Ohlone	East Bay	26	2	2	1	3
San Francisco	Mid-Peninsula	733	16	6	32	38
Santa Rosa	North Bay	416	12	6	26	32
Solano	North Bay	74	1	0	0	0
Academy of Art University	Mid-Peninsula	n/a	n/a	25	0	25
FIDM-Fashion Institute of Design & Merchandising-SF	Mid-Peninsula	n/a	n/a	7	0	7
Argosy University-The Art Institute of CA-SF	Mid-Peninsula	n/a	n/a	11	0	11
Argosy University-The Art Institute of CA-Silicon Valley	Silicon Valley	n/a	n/a	12	0	12
Total Bay Region		**3,334**	**118**	**121**	**85**	**206**
Total East Bay Sub-Region		**604**	**21**	**17**	**4**	**21**

Sources: IPEDS, Data Mart and Launchboard

NOTE: For Community Colleges, the annual average for Associate Degrees and Certificates is 2014-17. There appears to be no programs at Other Educational Postsecondary Institutes based on a crosswalk of TOP to CIP codes. Headcount is for 2015-16. For the other educational postsecondary institutes, the annual average for awards is 2013-16 from IPEDS.

Student Outcomes

Table 17: Four Employment Outcomes Metrics for Students Who Took Courses on TOP 1030.00 - Graphic Art and Design

2014-15	Bay Region (All Programs)	State (1030.00)	Bay (1030.00)	East Bay (1030.00)	Top Colleges on 1030.00 Graphic Art & Design in the Bay Region	
% Employed Four Quarters After Exit	68%	56%	55%	63%	Las Positas	73%
Median Earnings Two Quarters After Exit	$12,640	$5,765	$7,885	$4,960	CCSF	$10,345
Median % Change in Earnings	37%	43%	31%	61%	Foothill	71%
% of Students Earning a Living Wage	51%	33%	41%	32%	Mission	65%

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

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