

## Program Endorsement Brief: 0614.30/Website Design and Development

### Mobile Applications Certificate

Orange County Center of Excellence, April 2021

#### Summary Analysis

<b>Program Endorsement:</b>	<b>Endorsed:</b> All Criteria Met <input type="checkbox"/>	<b>Endorsed:</b> Some Criteria Met <input checked="" type="checkbox"/>	<b>Not</b> Endorsed <input type="checkbox"/>
<b>Program Endorsement Criteria</b>			
<b>Supply Gap:</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Living Wage:</b> (Entry-Level, 25 <sup>th</sup> )	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Education:</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Emerging Occupation(s)</b>			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to two middle-skill occupations: *web developers and digital interface designers* (15-1257), and *graphic designers* (27-1024) and one above middle-skill occupation: *software developers and software quality assurance analysts and testers* (15-1256) Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree.<sup>1</sup> Though *software developers and software quality assurance analysts and testers* (15-1256) is considered an above middle-skill occupation, it is included in this report because the proposed Mobile Applications Certificate emphasizes the basics of mobile application development and students will learn the development process of mobile application creation; both of these areas and the related skills students will learn are directly related to the *software developers and software quality assurance analysts and testers* occupation. This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data, there appears to be a supply gap for middle-skill occupations related to mobile applications in the region. While the majority of annual openings for the occupations in this report typically require a bachelor’s degree, entry-level wages exceed the living wage in both Los Angeles and Orange counties. **Therefore, due to some of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

#### Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **2,832 middle-skill jobs available annually** in the region due to new job growth and replacements,

<sup>1</sup> The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor’s degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

which is more than the **967 awards conferred annually** by educational institutions in the region.

- **Living Wage Criteria** – Within Orange County, **all of the annual job openings** for these occupations related to mobile applications have **entry-level wages above the county's living wage** (\$17.36/hour).<sup>2</sup>
- **Educational Criteria** – Within the LA/OC region, **89% of the annual job openings** for occupations related to mobile applications **typically require a bachelor's degree**.
  - Furthermore, the national-level educational attainment data indicates **between 25.8% and 25.9% of workers in these middle-skill mobile application occupations have completed some college or an associate degree**.

**Supply:**

- There are **22 community colleges** in the LA/OC region that issue awards related to mobile applications, conferring an average of **437 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **530 awards conferred annually** in related training programs by non-community college institutions throughout the region.

**Occupational Demand**

Exhibit 1 shows the five-year occupational demand projections for the middle-skill occupations related to mobile applications. In Los Angeles/Orange County, the number of jobs related to these middle-skill occupations is projected to increase by 4% through 2024. There will be more than 2,800 job openings per year through 2024 due to job growth and replacements.

*This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.*

**Exhibit 1: Middle-skill occupational demand in Los Angeles and Orange Counties<sup>3</sup>**

<b>Geography</b>	<b>2019 Jobs</b>	<b>2024 Jobs</b>	<b>2019-2024 Change</b>	<b>2019-2024 % Change</b>	<b>Annual Openings</b>
Los Angeles	20,867	21,700	833	4%	2,127
Orange	7,096	7,354	258	4%	704
<b>Total</b>	<b>27,963</b>	<b>29,054</b>	<b>1,092</b>	<b>4%</b>	<b>2,832</b>

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 3/22/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

<sup>3</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 2 shows the five-year occupational demand projections for the above middle-skill occupation in this report related to mobile applications (*software developers and software quality assurance analysts and testers*). In Los Angeles/Orange County, the number of jobs related to this occupation is projected to increase by 9% through 2024. There will be nearly 5,600 job openings per year through 2024 due to job growth and replacements.

*This report includes employment projection data by Emsi which uses EDD information. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.*

**Exhibit 2: Above middle-skill occupational demand in Los Angeles and Orange Counties<sup>4</sup>**

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	37,605	41,228	3,624	10%	3,738
Orange	19,046	20,658	1,612	8%	1,842
<b>Total</b>	<b>56,651</b>	<b>61,886</b>	<b>5,235</b>	<b>9%</b>	<b>5,580</b>

### Wages

The labor market endorsement in this report considers the entry-level hourly wages for all three occupations (middle-skill and above middle-skill) related to mobile applications in Orange County as they relate to the county’s living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

**Orange County**— All of the annual openings for these mobile application occupations have entry-level wages above the living wage for one adult (\$17.36 in Orange County). Typical entry-level hourly wages are in a range between \$18.64 and \$43.48. Experienced workers can expect to earn wages between \$36.77 and \$70.77, which are higher than the living wage estimate. Orange County’s average wages are below the average statewide wage of \$58.17 for these occupations.

**Los Angeles County**— All of the annual openings for these mobile application occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between \$18.78 and \$44.48. Experienced workers can expect to earn wages between \$37.67 and \$72.56, which are higher than the living wage estimate. Los Angeles County’s average wages are below the average statewide wage of \$58.17 for these occupations.

<sup>4</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

## **Job Postings**

There were 49,673 online job postings for occupations related to mobile applications listed in the past 12 months. The highest number of job postings were for software engineers, senior software engineers, graphic designers, DevOps engineers, and software developers. The top software skills were: Java, JavaScript, SQL, Python, and Microsoft C#. The top three employers, by number of job postings, in the region were: Raytheon, Northrop Grumman, and Anthem Blue Cross.

*It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.*

## **Educational Attainment**

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for *software developers and software quality assurance analysts and testers*, and *graphic designers*, and an associate degree for *web developers and digital interface designers*. In the LA/OC region, the majority of annual job openings (89%) typically require a bachelor's degree. While the national-level educational attainment data indicates 11.3% of *software developers and quality assurance analysts and testers* in the field have completed some college or an associate degree as their highest level of education, between 25.8% and 25.9% of middle-skill mobile applications workers in the field have completed some college or an associate degree. Of the 55% of job postings related to mobile applications listing a minimum education requirement in Los Angeles/Orange County, 95% (25,837) requested a bachelor's degree, 3% (889) requested a high school diploma, and 2% (437) requested an associate degree.

## **Educational Supply**

**Community College Supply**—Exhibit 3, on the following page, shows the three-year average number of awards conferred by community colleges in the related TOP codes: Website Design and Development (0614.30), Software Applications (0702.10), Computer Software Development (0707.00), Computer Programming (0707.10), World Wide Web Administration (0709.00), and E-Commerce (Technology emphasis) (0709.00). The colleges with the most completions in the region are: Mt. San Antonio, Santa Monica, and Irvine Valley. Over the past 12 months, there were 11 other related program recommendation requests from regional community colleges.

**Exhibit 3: Regional community college awards (certificates and degrees), 2016-2019**

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0614.30	Website Design and Development	LA Pierce	2	-	3	2
		Mt San Antonio	-	9	9	6
		<b>LA Subtotal</b>	<b>2</b>	<b>9</b>	<b>12</b>	<b>8</b>
		Coastline	1	-	1	1
		Fullerton	-	-	3	1
		Irvine	8	2	3	4
		Saddleback	5	4	7	5
		Santa Ana	1	1	-	1
		Santiago Canyon	12	9	24	15
		<b>OC Subtotal</b>	<b>27</b>	<b>16</b>	<b>38</b>	<b>27</b>
<b>Supply Subtotal/Average</b>			<b>29</b>	<b>25</b>	<b>50</b>	<b>35</b>
0702.10	Software Applications	Cerritos	4	3	9	5
		LA City	2	-	-	1
		LA Mission	2	7	2	4
		LA Southwest	2	2	1	2
		Mt San Antonio	2	3	1	2
		Pasadena	2	-	-	1
		Santa Monica	17	10	18	15
		<b>LA Subtotal</b>	<b>31</b>	<b>25</b>	<b>31</b>	<b>29</b>
		Coastline	9	4	9	7
		Fullerton	1	-	-	0
		Irvine	28	22	39	30
		Saddleback	9	3	2	5
		<b>OC Subtotal</b>	<b>47</b>	<b>29</b>	<b>50</b>	<b>42</b>
		<b>Supply Subtotal/Average</b>			<b>78</b>	<b>54</b>

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0707.00	Computer Software Development	LA City	-	-	1	0
		Pasadena	4	-	-	1
		<b>LA Subtotal</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>2</b>
		Cypress	1	1	1	1
		Golden West	7	3	4	5
		Orange Coast	5	7	7	6
		Saddleback	3	3	13	6
		<b>OC Subtotal</b>	<b>16</b>	<b>14</b>	<b>25</b>	<b>18</b>
<b>Supply Subtotal/Average</b>			<b>20</b>	<b>14</b>	<b>26</b>	<b>20</b>
0707.10	Computer Programming	Cerritos	1	4	-	2
		East LA	5	6	8	6
		Glendale	1	2	2	2
		LA City	43	-	-	14
		LA Mission	2	5	6	4
		LA Pierce	6	9	18	11
		LA Southwest	2	1	-	1
		LA Valley	26	10	7	14
		Long Beach	-	2	4	2
		Mt San Antonio	68	62	119	83
		Pasadena	1	8	11	7
		Santa Monica	25	42	44	37
		West LA	-	-	1	0
		<b>LA Subtotal</b>	<b>180</b>	<b>151</b>	<b>220</b>	<b>184</b>
		Cypress	27	18	22	22
		Fullerton	-	-	16	5
		Irvine	16	10	8	11
		Orange Coast	29	29	31	30
		Santa Ana	-	1	13	5
		Santiago Canyon	-	30	9	13
<b>OC Subtotal</b>	<b>72</b>	<b>88</b>	<b>99</b>	<b>86</b>		
<b>Supply Subtotal/Average</b>			<b>252</b>	<b>239</b>	<b>319</b>	<b>270</b>

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0709.00	World Wide Web Administration	Glendale	3	9	6	6
		LA Pierce	5	5	9	6
		Long Beach	5	4	22	10
		West LA	8	24	13	15
		<b>LA Subtotal</b>	<b>21</b>	<b>42</b>	<b>50</b>	<b>38</b>
		Saddleback	5	-	-	2
		<b>OC Subtotal</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>Supply Subtotal/Average</b>			<b>26</b>	<b>42</b>	<b>50</b>	<b>39</b>
0709.10	E-Commerce (Technology emphasis)	East LA	-	-	1	0
		<b>LA Subtotal</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
		Saddleback	-	-	6	2
		<b>OC Subtotal</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>2</b>
<b>Supply Subtotal/Average</b>			<b>0</b>	<b>0</b>	<b>7</b>	<b>2</b>
<b>Supply Total/Average</b>			<b>405</b>	<b>374</b>	<b>533</b>	<b>437</b>

**Non-Community College Supply**—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for mobile applications. Exhibit 4 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Computer Programming/Programmer, General (11.0201), Computer Programming, Other (11.0299), Web Page, Digital/Multimedia and Information Resources Design (11.0801), Computer Software and Media Applications, Other (11.0899), Computer and Information Systems Security/Information Assurance (11.1033), Web/Multimedia Management and Webmaster (11.1004), and E-Commerce/Electronic Commerce (52.0208). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, four-year colleges in the region conferred an average of 530 awards annually in related training programs.

**Exhibit 4: Regional non-community college awards, 2014-2017**

<b>CIP Code</b>	<b>Program</b>	<b>College</b>	<b>2014-2015 Awards</b>	<b>2015-2016 Awards</b>	<b>2016-2017 Awards</b>	<b>3-Year Award Average</b>
11.0201	Computer Programming/ Programmer, General	ABCO Technology	6	12	18	12
		ITT Tech. Institute-San Dimas	5	-	-	2
		University of Phoenix-CA	68	62	43	58
11.0299	Computer Programming, Other	Adv. Computing Institute	52	48	1	34
11.0801	Web Page, Digital/ Multimedia and Information Resources Design	Adv. Computing Institute	73	46	57	59
		Argosy Univ.-The Art Institute of California-Hollywood	22	20	24	22
		Argosy Univ.-The Art Institute of California-Los Angeles	15	23	24	21
		Argosy Univ.-The Art Institute of California-Orange County	19	15	33	22
		DeVry University-California	91	69	36	65
		Fremont College	8	1	-	3
		University of Phoenix-California	5	6	1	4
11.0899	Computer Software and Media Applications, Other	Art Center College of Design	-	5	7	4
		Learnet Academy	59	45	41	48
11.1003	Computer and Information Systems Security/Information Assurance	Azusa Pacific University	8	4	3	5
		ITT Technical Institute-Orange	37	-	-	12
		ITT Technical Institute-San Dimas	23	-	-	8
		ITT Technical Institute-Sylmar	19	-	-	6
		ITT Technical Institute-Torrance	6	-	-	2
		Learnet Academy	-	39	48	29
		Mt Sierra College	14	9	8	10
		University of Phoenix-California	111	74	71	85
11.1004	Web/Multimedia Management and Webmaster	ABCO Technology	7	9	12	9
		Pepperdine University	-	1	-	0
		University of Phoenix-California	7	5	4	5
52.0208	E-Commerce/ Electronic Commerce	University of La Verne	5	3	-	3
		University of Phoenix-California	1	1	-	1
<b>Supply Total/Average</b>			<b>661</b>	<b>497</b>	<b>431</b>	<b>530</b>



Appendix A: Occupational demand and wage data by county

Exhibit 4. Orange County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Web Developers and Digital Interface Designers (15-1257)	2,710	2,897	187	7%	248	\$20.32	\$31.41	\$44.31
Graphic Designers (27-1024)	4,385	4,457	71	2%	456	\$18.64	\$27.00	\$36.77
<b>Middle-Skill Subtotal</b>	<b>7,096</b>	<b>7,354</b>	<b>258</b>	<b>4%</b>	<b>704</b>			
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	19,046	20,658	1,612	8%	1,842	\$43.48	\$56.74	\$70.77
<b>Above Middle-Skill Subtotal</b>	<b>19,046</b>	<b>20,658</b>	<b>1,612</b>	<b>8%</b>	<b>1,842</b>			
<b>Total</b>	<b>26,142</b>	<b>28,012</b>	<b>1,870</b>	<b>7%</b>	<b>2,546</b>			

Exhibit 5. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Web Developers and Digital Interface Designers (15-1257)	6,916	7,488	572	8%	655	\$21.50	\$33.13	\$46.71
Graphic Designers (27-1024)	13,951	14,212	261	2%	1,472	\$18.78	\$27.52	\$37.67
<b>Middle-Skill Subtotal</b>	<b>20,867</b>	<b>21,700</b>	<b>833</b>	<b>4%</b>	<b>2,127</b>			
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	37,605	41,228	3,624	10%	3,738	\$44.48	\$58.13	\$72.56
<b>Above Middle-Skill Subtotal</b>	<b>37,605</b>	<b>41,228</b>	<b>3,624</b>	<b>10%</b>	<b>3,738</b>			
<b>Total</b>	<b>58,472</b>	<b>62,929</b>	<b>4,457</b>	<b>8%</b>	<b>5,865</b>			

### Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Web Developers and Digital Interface Designers (15-1257)	9,626	10,385	759	8%	903
Graphic Designers (27-1024)	18,336	18,669	333	2%	1,929
<b>Middle-Skill Subtotal</b>	<b>27,963</b>	<b>29,054</b>	<b>1,092</b>	<b>4%</b>	<b>2,832</b>
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	56,651	61,886	5,235	9%	5,580
<b>Above Middle-Skill Subtotal</b>	<b>56,651</b>	<b>61,886</b>	<b>5,235</b>	<b>9%</b>	<b>5,580</b>
<b>Total</b>	<b>84,614</b>	<b>90,941</b>	<b>6,327</b>	<b>7%</b>	<b>8,412</b>

#### Appendix B: Sources

- O\*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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