This Sector Profile highlights key points from the entire ICT and Digital Media sector in Orange County as well as from the Orange County (OC) Sector Analysis Project – a research report conducted by the OC Center of Excellence for Labor Market Research. ICT companies can range from small, innovative startup companies with less than 5 employees to large, global corporations with more than 1,000 employees. ICT workers develop new innovative products and services that improve productivity of firms across all industries. ICT companies include those in telecommunications, web development, data analytics, cybersecurity, video game development, and computer software. ICT and Digital Media employers place significant value in industry certifications and/or portfolios of previous work. Industry-based certifications are offered by the companies who developed the software, such as Microsoft, Cisco or CompTIA. Certifications are awarded based on completion of coursework and typically require a set number of instructional hours. In 2016, 65% of people who completed or exited an ICT and Digital Media community college program in the Orange County region were employed within a year after exiting.

The ICT and Digital Media sector accounts for 46,524 jobs in the Orange County region and 6.1% of all ICT and Digital Media jobs in California. There are approximately 3,553 individual business in the region which makes up 8.3% of all the businesses for the sector in California. This sector is projected to grow by 9% (or 4,038 jobs) in the next five years in Orange County. The average earnings per ICT and Digital Media job are $130,418.

Local Employers

Numa Networks
C2 Wireless
Open Text

Blizzard Entertainment
Ready at Dawn Studios
Digital Network Group
Middle-skill jobs are occupations that community college students would be best prepared for after obtaining a certificate or degree. The top middle-skill jobs for the ICT and Digital Media sector are included below, along with corresponding entry-level and median hourly wages.

**Middle-Skill Jobs Attainable with a Community College Education, Orange County (2018-2023)**

<table>
<thead>
<tr>
<th>SOC Code</th>
<th>SOC Occupational Title</th>
<th>Demand Annual Openings</th>
<th>Entry-Level Wage</th>
<th>Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-1199</td>
<td>Computer Occupations, All Other</td>
<td>408</td>
<td>$27.90</td>
<td>$40.40</td>
</tr>
<tr>
<td>27-1024</td>
<td>Graphic Designers</td>
<td>400</td>
<td>$18.37</td>
<td>$21.57</td>
</tr>
<tr>
<td>49-2022</td>
<td>Telecommunications Equipment Installers and Repairers, Except Line Installers</td>
<td>352</td>
<td>$20.62</td>
<td>$26.45</td>
</tr>
<tr>
<td>15-1142</td>
<td>Network and Computer Systems Administrators</td>
<td>307</td>
<td>$32.76</td>
<td>$42.51</td>
</tr>
<tr>
<td>15-1134</td>
<td>Web Developers</td>
<td>236</td>
<td>$21.85</td>
<td>$27.91</td>
</tr>
<tr>
<td>15-1152</td>
<td>Computer Network Support Specialists</td>
<td>178</td>
<td>$25.42</td>
<td>$34.04</td>
</tr>
<tr>
<td>49-9052</td>
<td>Telecommunications Line Installers and Repairers</td>
<td>166</td>
<td>$20.54</td>
<td>$28.18</td>
</tr>
<tr>
<td>27-2012</td>
<td>Producers and Directors</td>
<td>128</td>
<td>$23.40</td>
<td>$29.08</td>
</tr>
<tr>
<td>15-1143</td>
<td>Computer Network Architects</td>
<td>127</td>
<td>$38.56</td>
<td>$51.61</td>
</tr>
<tr>
<td>27-1021</td>
<td>Commercial and Industrial Designers</td>
<td>56</td>
<td>$24.45</td>
<td>$29.93</td>
</tr>
<tr>
<td>17-3031</td>
<td>Surveying and Mapping Technicians</td>
<td>51</td>
<td>$26.47</td>
<td>$33.04</td>
</tr>
</tbody>
</table>
Top middle-skill jobs are defined as occupations with the most labor market demand, stable employment growth, and entry-level wages at or above the living wage, as determined by the California Family Needs Calculator, currently at $17.39. Comparing labor market demand with program supply suggests that the top middle-skill jobs in this sector have supply gaps in the Orange County region. Labor market demand is defined as the number of average annual job openings per year that employers expect to fill for a particular occupation. Program supply is the number of awards (e.g., degrees, certificates) from community colleges and other training providers.

* Indicates that the occupation has an oversupply of labor, and N/A indicates that no community college program reported awards for this occupation or no community college program is available for this occupation.

1 The living wage as determined by the California Family Need Calculator is the hourly wage that a single adult needs to earn to meet basic needs in Orange County. insightcced.org/2018-family-needs-calculator/
**MIDDLE-SKILL JOBS WITH ENTRY-LEVEL WAGES BELOW THE REGIONAL LIVING WAGE**

While it is important to understand which top middle-skill jobs have opportunities for increased program supply, it is also important to consider middle-skill occupations that have entry-level wages below the regional living wage, currently at $17.39, but median wages near or above it. Since wages generally increase from entry-level to median earnings with additional experience and training, students could potentially earn self-sustaining wages with additional apprenticeship or work-based learning opportunities.

**Middle-Skill Jobs in Orange County with Entry-Level Wages Below the Regional Living Wage**

<table>
<thead>
<tr>
<th>SOC Code</th>
<th>SOC Occupational Title</th>
<th>Demand Annual Openings</th>
<th>Entry-Level Wage 25th Percentile</th>
<th>Median Wage Above the Living Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-4021</td>
<td>Photographers</td>
<td>226</td>
<td>$16.25</td>
<td>$18.15</td>
</tr>
<tr>
<td>27-4011</td>
<td>Audio and Video Equipment Technicians</td>
<td>143</td>
<td>$15.24</td>
<td>$18.18</td>
</tr>
<tr>
<td>27-1014</td>
<td>Multimedia Artists and Animators</td>
<td>66</td>
<td>$14.46</td>
<td>$24.25</td>
</tr>
</tbody>
</table>

**Entry-Level and Median Wages for Middle-Skill Jobs in Orange County with Entry-Level Wages Below the Regional Living Wage**

**LEGEND**

- Demand
- Supply from CCs
- Supply from non CCs
Between July and August 2019, focus groups comprised of stakeholders from the community colleges and industry experts met to review the labor market demand and program supply for middle-skill jobs in Orange County’s Priority and Emerging Sectors. The objectives of the focus groups were to identify labor market supply gaps in middle-skill jobs and provide intelligence as to how Orange County community colleges are working to close supply gaps, as well as the challenges they encounter in their programs. The following summarizes the findings and recommendations for the ICT and Digital Media sector.

3,609 annual job openings (labor market demand)

968 average annual program awards (labor market supply)

2,641 supply gap (awards needed to close the gap)

### Key Finding Recommendation

1. **A four-year degree for information technology does not exist, so employers focus on skills and certifications when hiring workers:** Community colleges in Orange County train for a variety of certification, such as those offered by CompTIA and Cisco, but it is unclear which certifications employers value the most when making hiring decisions.

   **Recommendation:** To identify the most in-demand certifications, the Regional Director for Employer Engagement and faculty members could work with employers to determine which certifications they value the most. Once these certifications are identified, colleges could consider providing students with vouchers to take certification exams after they complete a degree or certificate.

2. **Finding data for emerging areas in the ICT and Digital Media sector makes it difficult to define the skills that should be taught in new programs:** Traditional labor market information does not always capture new and emerging areas, so information related to skills, certifications, and education requirements are not always readily available.

   **Recommendation:** To better understand local employer needs, colleges and the Regional Director for Employer Engagement could work with employers to identify emerging areas for which they need workers and identify the skills, certifications, and education employers require. Colleges could then work with the COE to verify this information in order to re-tool or develop new programs.

3. **Emerging areas in this sector require skills from a variety of disciplines:** New and emerging areas such as Augmented Reality (AR) and Virtual Reality (VR), cloud technology, cybersecurity, data analytics, and game design require a diverse skill set that is not often found in a single discipline. For example, game design may involve character design, concept art, story development, and programming skills, while data analytics skills can be used in a variety of business occupations.

   **Recommendation:** To diversify the skill set of students in ICT and Digital Media programs, faculty could work with their counterparts in other departments, such as business, to develop multi-disciplinary programs that will provide students with skills that could be used in multiple occupations.
Key Finding

Similar programs at different colleges could help train qualified workers for emerging areas, but some colleges may already have areas of specialization that can be expanded: Common challenges to expanding programs included the lack of dedicated lab space and high costs for equipment. If every college is using their resources to buy equipment for their individual campus, they may not be able to provide training in all areas of need.

Knowledge, Skills, and Abilities (KSAs) for the sector have not been validated by employers: The OC Sector Analysis Project brief examines job gaps but does not explore the specific KSAs taught at the colleges and compare them to the labor market’s demand for ICT and Digital Media KSAs.

Recommendation

Colleges could explore the idea of working with each other to establish college-specific specializations that build upon already existing infrastructure, personnel, and resources. Faculty at each college could work with each other to establish articulation agreements and clear pathways for students. For example, students could earn a foundational IT skills certificate at one college, then continue taking courses at another college that specializes in cybersecurity.

To determine if the region’s community colleges are training for the right KSAs, the ICT and Digital Media Regional Director for Employer Engagement should convene employers in a “regional advisory group” where employers can review program KSAs, provide feedback, and validate the KSAs’ current relevance and demand in the labor market.
The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California Community Colleges for program decision-making and resource-development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Education (CE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

The Centers of Excellence Initiative is funded in part by the Chancellor’s Office, California Community Colleges, Economic and Workforce Development Program. The Orange County COE is fully funded by the Orange County Regional Strong Workforce Program allocation. The Centers aspire to be the leading source of regional workforce information and insight for California Community Colleges. More information about the Centers of Excellence is available at www.coeccc.net.

Prepared by:
Jesse Crete, Director
crete_jesse@rsccd.edu
Jacob Poore, Research Analyst
poore_jacob@rsccd.edu
Orange County Center of Excellence for Labor Market Research

For the full report, visit Los Angeles/Orange County at coeccc.net

Sources
Demand data is pulled from Emsi, a software program that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS), and other government agencies.

Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Important Disclaimer
All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports such as those from the Orange County Center of Excellence for Labor Market Research and Cal-PASS Plus LaunchBoard. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host college/district, nor California Community Colleges Chancellor’s Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Please consider the environment before printing.
This document is designed for double-sided printing.