Computer Graphics and Digital Imagery

Inland Empire/Desert Region (Riverside-San Bernardino-Ontario Metropolitan Statistical Area) & Los Angeles and Orange Counties

Summary

- Occupations in the computer graphics and digital imagery group are projected to have a total of **1,411 job openings, or 282 annual job openings** over the next five years (2017-2022) in the Inland Empire/Desert Region.

- The median wage for each occupation in the computer graphics and digital imagery occupational group is **above the MIT Living Wage estimate of $12.30 per hour** for a single adult living in the Inland Empire/Desert Region.

- There appears to be an **opportunity for program growth** based on the average annual number of program completions for the selected community college program (**18 average annual community college credentials)** and the annual openings for computer graphics and digital imagery occupations in the region (**282 annual job openings**).

Introduction

Completion of the computer graphics and digital imagery program (TOP 0614.60) provides knowledge of theories, principles, and uses of computer graphics vector- and raster-based software programs for consumer, commercial, and industrial applications.[1] Labor market demand data for Los Angeles and Orange counties are included this report in addition to the Inland Empire/Desert region. There are approximately ten times more job opportunities for workers in the computer graphics and digital imagery occupational group in Los Angeles and Orange counties than in the Inland Empire/Desert region. The occupations included in this group are:

- Graphic Designers
- Multimedia Artists and Animators

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[1] The Taxonomy of Programs, 6th Edition, February 2004

Job Opportunities

In 2017, there were 31,417 computer graphics and digital imagery jobs in the Inland Empire/Desert region & Los Angeles and Orange counties combined. Despite the 1% decline in new job employment across both regions employers are expected to hire 14,289 workers over the next five years to backfill jobs that workers are permanently vacating (includes retirements). New job growth is projected to decline by 1% in Los Angeles and Orange counties but increase employment by 4% in the Inland Empire/Desert region. Graduates of computer graphics and digital imagery programs should be able to secure a job in their field of study if they decided to stay in the local region or move to the larger surrounding Counties. Tables 1, 2, & 3 in the Appendix show the projected job growth, wages, education, training, and work experience required for each of the occupations in this group for the Inland Empire/Desert region, Los Angeles and Orange counties, as well as both geographies combined.

Exhibit 1: Combined five-year projections for the computer graphics and digital imagery occupational group

Region	2017 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Inland Empire/Desert	2,788	4%	1,411	282	22%
Los Angeles and Orange Counties	28,629	(1%)	12,878	2,576	20%
Total	**31,417**	**(1%)**	**14,289**	**2,858**	**20%**

Source: EMSI 2018.4

Computer Graphics and Digital Imagery in the Inland Empire/Desert region & Los Angeles and Orange counties, January 2019

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Earnings

The median wage for each of the occupations in the computer graphics and digital imagery occupational group is above the MIT Living Wage estimate of $12.30 per hour for a single adult living in the Inland Empire/Desert region ($13.96 for Los Angeles and Orange counties). Detailed information on the MIT Living Wage Calculator, including additional wage requirements for adults with dependent children, is available on their website: http://livingwage.mit.edu/metros/40140. Exhibit 2 displays wage information by region for this occupational group.

Exhibit 2: Earnings for the computer graphics and digital imagery occupational group

Region	Occupation	Entry to Experienced Hourly Earnings Range (25th to 75th Pctl.)	Median Wage (50th Pctl.)	Avg. Annual Earnings
Inland Empire/ Desert	Graphic Designers	$17.25 to $23.88	$19.66	$45,000
Living Wage $12.30/hr	Multimedia Artists and Animators	$11.94 to $20.73	$14.15	$35,900
Los Angeles/ Orange County	Graphic Designers	$17.77 to $29.53	$21.32	$51,700
Living Wage $13.96/hr	Multimedia Artists and Animators	$17.06 to $45.10	$31.51	$70,200

Source: EMSI 2018.4

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Job Posting Data (Real-Time Labor Market Information)

On average, it takes 37 days for employers to find qualified candidates to fill open computer graphics and digital imagery positions in the Inland Empire/Desert region and Los Angeles and Orange counties combined, only three days longer than the national average. However, there is a lot of variation in the time it takes to fill open positions by region and occupation. For example, it takes more than twice as long to fill graphic designer positions in the Inland Empire/Desert region (77 days) than in Los Angeles/Orange counties (34 days). Exhibit 3 shows the number of job ads posted during the last 12 months along with the regional and national average time to fill for both regions combined.

Exhibit 3: Job ads and time to fill, Jan to Dec 2018

Region	Occupation	Job Ads	Regional Average Time to Fill (Days)	National Average Time to Fill (Days)
Inland Empire/ Desert	Graphic Designers	286	77	33
	Multimedia Artists and Animators	14	45	37
Los Angeles/ Orange County	Graphic Designers	4,424	34	33
	Multimedia Artists and Animators	977	38	37
Total		**5,701**	**37**	**34**

Source: Burning Glass – Labor Insights

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Employers

Exhibit 4 displays local employers posting the most job ads for computer graphics and digital imagery occupations during the last 12 months in the Inland Empire/Desert region.

Exhibit 4: Employers most frequently posting job ads, Jan to Dec 2018

Region	Occupation	Top Employers
Inland Empire/ Desert	Graphic Designers *(n=228)*	• California State University • ESRI • Loma Linda University Health
	Multimedia Artists and Animators *(n=10)*	• DK Global • Strategic Operational Solutions
Los Angeles/ Orange County	Graphic Designers *(n=2,986)*	• Solugenix Corporation • Techstyle Fashion Group • NBC
	Multimedia Artists and Animators *(n=674)*	• Activision • Electronic Arts • Blizzard Entertainment

Source: Burning Glass – Labor Insights

In-Demand Skills

Exhibit 5 lists a sample of in-demand specialized and employability skills that employers are seeking when looking for workers to fill computer graphics and digital imagery positions. Specialized skills are occupation-specific skills employers are requesting for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is commonly referred to as "soft skills." The skills reported in job postings may be utilized as a helpful guide for curriculum development.

Exhibit 5: Sample of in-demand skills from employer job ads, Jan to Dec 2018

Region	Occupation	Specialized Skills	Employability Skills	Software and Programming Skills
Inland Empire/ Desert	Graphic Designers *(n=269)*	• Social Media • Typesetting • Packaging	• Creativity • Detail-Oriented • Communication Skills	• Adobe Creative Suite • Microsoft Office • Social Media Platforms
	Multimedia Artists and Animators *(n=14)*	• Art Direction • Budgeting • Character Design	• Creativity • Teamwork/ Collaboration • Editing	• Adobe Creative Suite • 3D Studio Max • Autodesk Mudbox
Los Angeles/ Orange County	Graphic Designers *(n=4,127)*	• Social Media • Typesetting • Web Site Design	• Creativity • Communication Skills • Detail-Oriented	• Adobe Creative Suite • Microsoft Office • Infographics
	Multimedia Artists and Animators *(n=859)*	• Motion Graphics • Game Development • Typesetting	• Creativity • Communication Skills • Teamwork/ Collaboration	• Adobe Creative Suite • Autodesk Maya • Cinema 4D

Source: Burning Glass – Labor Insights

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Educational Requirements

Exhibits 6 and 7 display the entry-level education typically required to enter each occupation according to the Bureau of Labor Statistics, educational attainment for incumbent workers with "some college, no degree" and an "associate degree" according to the U.S. Census, and the minimum advertised education requirement requested by employers in online job ads.

Exhibit 6: Educational requirements and attainment, Inland Empire/Desert Region, Jan to Dec 2018

Inland Empire Region Occupations	Work Experience Required	Typical Entry-Level Education Requirement	Two-Year Postsecondary Level of Educational Attainment*	Minimum Advertised Education Requirement from Job Ads			
				Number of Job Postings (n=)	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Graphic Designers	None	Bachelor's degree	29%	*152*	12%	15%	73%
Multimedia Artists and Animators	None	Bachelor's degree	27%	*11*	-	-	100%

Source: EMSI 2018.4, Burning Glass – Labor Insights
*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Exhibit 7: Educational requirements and attainment, Los Angeles/Orange counties, Jan to Dec 2018

Los Angeles and Orange County Occupations	Work Experience Required	Typical Entry-Level Education Requirement	Two-Year Postsecondary Level of Educational Attainment*	Minimum Advertised Education Requirement from Job Ads			
				Number of Job Postings (n=)	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Graphic Designers	None	Bachelor's degree	29%	*1,911*	9%	8%	83%
Multimedia Artists and Animators	None	Bachelor's degree	27%	*273*	3%	5%	92%

Source: EMSI 2018.4, Burning Glass – Labor Insights
*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Student Completions

Exhibits 8 shows the annual average regional community college credentials (associate degrees and certificates) conferred during the three academic years between 2014 and 2017, with the relevant TOP code as well as the program titles used at each college, sourced from the Chancellor's Office Curriculum Inventory (COCI). Please note, a credential is not equivalent to a single person in search of a job opening since a student may earn more than one award, such as an associate degree in addition to a certificate. Community College student outcome information is from the CTE LaunchBoard based on the selected TOP code(s) and region.

Exhibit 8: Annual average community college student completions for computer graphics and digital imagery programs

0614.60 – Computer Graphics and Digital Imagery	Annual Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
Chaffey – *Computer Graphic Design for Print Media*	204	
Associate Degree		2
Certificate 30 to < 60 semester units		1
Copper Mountain		
Crafton Hills – *Computer Assisted Graphic Design*	24	
Certificate 18 to < 30 semester units		1
Desert – *Digital Design and Production*	235	
Associate Degree		5
Certificate 18 to < 30 semester units		5
Palo Verde		
Certificate 6 to < 18 semester units		4
Total community college headcount (2016-17)	**463**	
Total annual average community college credentials		**18**

Source: LaunchBoard, IPEDS, COCI

0614.60 - Computer Graphics and Digital Imagery program Strong Workforce outcomes in the Inland Empire/Desert region in the academic year 2015-16 [unless noted otherwise]:

- Number of students who completed 12+ CTE units in one year: 75 (CA: 43) [2016-17]
- Number of students who transferred to a 4-year institution: 27 (CA: 17)
- Employed in the fourth fiscal quarter after exit: 65% (CA: 63%)
- Median annual earnings: $14,844 (CA: $20,571)
- Median change in earnings: 93% (CA: 53%)
- The proportion of students who attained a living wage: 20% (CA: 44%)
- The percentage in a job closely related to the field of study: N/A (CA: 63%) [2014-15]
- Economically disadvantaged students: 76% (CA: 64%) [2016-17]

Sources

Chancellor's Office Curriculum Inventory (COCI, version 2.0)
CTE LaunchBoard
Economic Modeling Specialists International (EMSI)
Labor Insight/Jobs (Burning Glass)
MIT Living Wage Calculator
O*Net Online
Taxonomy of Programs, 6th edition
The Integrated Postsecondary Education Data System (IPEDS)

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Appendix A: Occupation definitions, sample job titles, five-year projections, and earnings for computer graphics and digital imagery occupations

Occupation Definitions (SOC code), *Education and Training Requirement, Community College Education Attainment*

Multimedia 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.

Sample job titles: 3D Animator, 3D Artist, Animation Director, Animator, Art Director, Artist, Creative Director, Graphic Artist, Graphic Designer, Illustrator

Entry-Level Educational Requirement: Bachelor's degree
Training Requirement: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 27%

Graphic Designers (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.

Sample job titles: Artist, Creative Director, Creative Manager, Design Director, Designer, Graphic Artist, Graphic Designer, Online Producer, Production Artist, Publications Designer

Entry-Level Educational Requirement: Bachelor's degree
Training Requirement: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 29%

Table 1. 2017 to 2022 job growth, wages, education, training, and work experience required for the computer graphics and digital imagery occupational group, Inland Empire/Desert region

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage*	Median Hourly Wage*	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Graphic Designers (27-1024)	2,495	109	4%	256	$17.25 to $23.88	$19.66	$45,000	Bachelor's degree & none	None
Multimedia Artists and Animators (27-1014)	294	13	4%	26	$11.94 to $20.73	$14.15	$35,900	Bachelor's degree & none	None
Total	**2,788**	**123**	**4%**	**282**	-	-	-	-	-

Source: EMSI 2018.4
*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage

Table 2. 2017 to 2022 job growth, wages, education, training, and work experience required for the computer graphics and digital imagery occupational group, Los Angeles and Orange counties

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage*	Median Hourly Wage*	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Graphic Designers (27-1024)	20,307	(61)	(0%)	1,899	$17.77 to $29.53	$21.32	$51,700	Bachelor's degree & none	None
Multimedia Artists and Animators (27-1014)	8,322	(228)	(3%)	676	$17.06 to $45.10	$31.51	$70,200	Bachelor's degree & none	None
Total	**28,629**	**(288)**	**(1%)**	**2,576**	-	-	-	-	-

Source: EMSI 2018.4
*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage

Table 3. 2017 to 2022 job growth, wages, education, training, and work experience required for the computer graphics and digital imagery occupational group, Inland Empire/Desert region & Los Angeles and Orange counties combined

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage*	Median Hourly Wage*	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Graphic Designers (27-1024)	22,802	48	0%	2,155	$17.70 to $28.96	$21.06	$51,000	Bachelor's degree & none	None
Multimedia Artists and Animators (27-1014)	8,615	(214)	(2%)	702	$16.44 to $44.75	$30.73	$69,100	Bachelor's degree & none	None
Total	**31,417**	**(166)**	**(1%)**	**2,858**	-	-	-	-	-

Source: EMSI 2018.4
*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage