

# Technical Theater Certificate

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*The Inland Empire/Desert Region (Riverside-San Bernardino-Ontario Metropolitan Statistical Area) and the Los Angeles/Orange County Region (Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area)*

## Summary

- Total employment for the technical theater occupational group is expecting to increase 8% between 2017 and 2022 in Los Angeles, Orange, Riverside, and San Bernardino counties. More than 14,300 job openings will be available over the five-year timeframe.
- The median wage for each of the occupations in the technical theater 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 except for the motion picture projectionists occupation.
- There appears to be an opportunity for program growth based on the average annual number of program completions (**3 annual average completions in the Inland Empire/Desert Region**) and the annual job openings for technical theater occupational group in the local region (**2,861 annual job openings in all regions combined**).

## Introduction

This report details the occupations relevant to the technical theater program. For entertainment-based industries, such as the theater business, Los Angeles and Orange counties are included in the demand analyses due to the proximity to the Inland Empire/Desert Region, as well as the increased job opportunities there. For this particular occupational group, there are 24 times more jobs in Los Angeles and Orange counties than there are in the Inland Empire/Desert Region. The following six occupations included in the technical theater occupational group are:

- Audio and Video Equipment Technicians
- Costume Attendants
- Makeup Artists, Theatrical and Performance
- Motion Picture Projectionists
- Sound Engineering Technicians
- Set and Exhibit Designers

## Job Opportunities

In 2017, there were nearly 23,500 technical theater occupational group jobs in Los Angeles, Orange, Riverside, and San Bernardino counties. Across the four-county region, employment related to the technical theater occupational group is expected to increase 8% through 2022. Employers in the region will need to hire more than 14,300 workers over the next five years to fill new jobs and to backfill jobs that workers are leaving permanently (includes retirements). Appendix A, Tables 1, 2, and 3 show the projected job growth for each of the occupations in this group across the regions.

*Exhibit 1: Five-year projections for the technical theater occupational group in the Inland Empire/Desert, Los Angeles/Orange County, and the combined region*

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	937	10%	561	112	16%
Los Angeles/Orange County	22,562	8%	13,742	2,748	20%
<b>Combined</b>	<b>23,498</b>	<b>8%</b>	<b>14,303</b>	<b>2,861</b>	<b>20%</b>

Source: EMSI 2018.1

Over the last 12 months (April 2017 to March 2018), there were 625 advertisements (ads) for jobs in the technical theater occupational group in Los Angeles, Orange, Riverside, and San Bernardino counties. In the full-year 2017, there were 718 job ads; 816 job ads in 2016; 909 job ads in 2015; and 892 job ads in 2014. Exhibit 2 shows the number of job ads posted during the last 12 months for each of the occupations in the technical theater occupational group and the average time to fill for the local region and nationally. The average time to fill for sound engineering technicians in the region is two weeks longer than the national average and 12 days longer for costume attendants, indicating that employers might be experiencing difficulty finding qualified candidates for these positions. Average time to fill information is not available for motion picture projectionists.

*Exhibit 2: Job ads by each of the technical theater occupational group in Los Angeles, Orange, Riverside, and San Bernardino counties during the last 12 months, Apr 2017 – Mar 2018*

Occupation	Job Ads	Average Time to Fill Regionally (Days)	Average Time to Fill Nationally (Days)
Audio and Video Equipment Technicians	322	32	36
Sound Engineering Technicians	154	57	43
Makeup Artists, Theatrical and Performance	90	27	31
Set and Exhibit Designers	29	50	46
Costume Attendants	18	46	34
Motion Picture Projectionists	12	-	-
<b>TOTAL</b>	<b>625</b>		

Source: Burning Glass – Labor Insights

## Earnings

The entry-level wage for all the occupations in this group are above the MIT Living Wage estimate of \$12.30 per hour for a single adult living in the Inland Empire/Desert Region except motion picture projectionists. The median wage for each occupation is sufficient for individuals living in the Los Angeles/Orange County Region, where the living wage is \$13.96 or \$29,031 per year, except motion picture projectionists. See Exhibits 3, 4, and 5 for wage information by occupation for the Inland Empire/Desert Region, Los Angeles/Orange County, and the combined region. There is insufficient data to calculate wage figures for motion picture projectionists in the Inland Empire/Desert Region.

*Exhibit 3: Earnings for the technical theater occupational group in the Inland Empire/Desert Region*

Occupation	Entry to Experienced Hourly Earnings Range*	Median Wage*	Avg. Annual Earnings
Makeup Artists, Theatrical and Performance	\$26.89 to \$32.74	\$30.09	\$63,100
Sound Engineering Technicians	\$20.30 to \$30.83	\$26.95	\$59,100
Costume Attendants	\$16.51 to \$33.69	\$25.57	\$53,900
Set and Exhibit Designers	\$16.24 to \$23.39	\$20.06	\$41,900
Audio and Video Equipment Technicians	\$13.13 to \$19.74	\$15.33	\$36,300

Source: EMSI 2018.1

\*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

**Exhibit 4: Earnings for the technical theater occupational group in Los Angeles/Orange County**

Occupation	Entry to Experienced Hourly Earnings Range*	Median Wage*	Avg. Annual Earnings
Makeup Artists, Theatrical and Performance	\$23.03 to \$52.26	\$32.71	\$76,100
Sound Engineering Technicians	\$20.15 to \$46.25	\$28.69	\$75,500
Costume Attendants	\$17.65 to \$33.50	\$25.69	\$56,700
Set and Exhibit Designers	\$19.45 to \$37.54	\$24.12	\$61,900
Audio and Video Equipment Technicians	\$16.89 to \$33.95	\$22.21	\$55,100
Motion Picture Projectionists	\$10.96 to \$15.86	\$12.22	\$32,400

Source: EMSI 2018.1

\*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

**Exhibit 5: Earnings for the technical theater occupational group in the combined Los Angeles/Orange County and Inland Empire/Desert Region**

Occupation	Entry to Experienced Hourly Earnings Range*	Median Wage*	Avg. Annual Earnings
Makeup Artists, Theatrical and Performance	\$23.21 to \$52.04	\$32.62	\$75,900
Sound Engineering Technicians	\$20.15 to \$45.56	\$28.64	\$75,100
Costume Attendants	\$17.56 to \$33.51	\$25.73	\$56,600
Set and Exhibit Designers	\$19.32 to \$36.78	\$23.97	\$61,400
Audio and Video Equipment Technicians	\$16.41 to \$33.24	\$21.73	\$54,200
Motion Picture Projectionists	\$10.92 to \$15.13	\$12.15	\$32,100

Source: EMSI 2018.1

\*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

## Work Locations, Employers, Skills, and Education

Exhibit 6 displays the top employers posting job ads as well as the top work locations from job ads during the last 12 months.

*Exhibit 6: The top employers and work locations for the technical theater occupational group in Los Angeles, Orange, Riverside, and San Bernardino counties during the last 12 months, Apr 2017 – Mar 2018*

Occupation	Top Employers	Top Work Locations
Technical Theater Occupational Group (n=625)	<ul style="list-style-type: none"> <li>PSAV Presentation Services</li> <li>Blizzard Entertainment</li> <li>California State University</li> <li>Activision</li> <li>Fox</li> </ul>	<ul style="list-style-type: none"> <li>Los Angeles</li> <li>Irvine</li> <li>Anaheim</li> <li>Burbank</li> <li>Culver City</li> </ul>

Source: Burning Glass – Labor Insights

Exhibit 7 lists a sample of in-demand specialized, soft, and software and programming skills that employers are seeking when looking for workers to fill technical theater positions. “N/A” indicates that no information was available from the limited number of job ads, or that the type of skill listed is not applicable to the occupation.

*Exhibit 7: Sample of in-demand skills from employer job ads for the technical theater occupational group the combined Los Angeles/Orange County and Inland Empire/Desert Region, Apr 2017- Mar 2018*

Occupation	Specialized skills	Soft skills	Software and Programming skills
Audio and Video Equipment Technicians (n=260)	<ul style="list-style-type: none"> <li>Equipment Operation</li> <li>Dynamic Host Configuration Protocol (DHCP)</li> <li>IP Address Setup</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Communication Skills</li> <li>Building Effective Relationships</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft Office</li> <li>Adobe Acrobat</li> <li>Adobe Photoshop</li> <li>Final Cut Pro</li> </ul>
Sound Engineering Technicians (n=77)	<ul style="list-style-type: none"> <li>Broadcast</li> <li>Routers</li> <li>Repair</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Physical Demand</li> <li>Creativity</li> </ul>	<ul style="list-style-type: none"> <li>Pro Tools</li> <li>Microsoft Office</li> <li>AutoCAD</li> </ul>
Makeup Artists, Theatrical and Performance (n=17)	<ul style="list-style-type: none"> <li>Color Theory</li> <li>Sculpting</li> <li>Painting</li> </ul>	<ul style="list-style-type: none"> <li>Communication Skills</li> <li>Writing</li> <li>Creativity</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Occupation	Specialized skills	Soft skills	Software and Programming skills
Set and Exhibit Designers (n=15)	<ul style="list-style-type: none"> <li>Budgeting</li> <li>Art Direction</li> <li>Painting/Sketching</li> </ul>	<ul style="list-style-type: none"> <li>Creativity</li> <li>Team Work/ Collaboration</li> <li>Communication Skills</li> </ul>	<ul style="list-style-type: none"> <li>Adobe Photoshop</li> <li>AutoCAD</li> <li>MAYA</li> <li>3D Studio Max</li> </ul>
Costume Attendants (n=7)	<ul style="list-style-type: none"> <li>Scheduling</li> <li>Repair</li> <li>Laundry</li> </ul>	<ul style="list-style-type: none"> <li>Communication Skills</li> <li>Building Effective Relationships</li> <li>Troubleshooting</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Motion Picture Projectionists (n=11)	<ul style="list-style-type: none"> <li>Repair</li> <li>Technical Support</li> <li>Customer Service</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting</li> <li>Team Work/ Collaboration</li> <li>Listening</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft Office</li> </ul>

Source: Burning Glass – Labor Insights

Exhibit 8 displays the entry-level education 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 8: Educational attainment and online job ads with minimum advertised education requirements for the technical theater occupational group the combined Los Angeles/Orange County and Inland Empire/Desert Region, Apr 2017- Mar 2018*

Occupation	Typical Entry-Level Education Requirement	Educational Attainment (Percent holding a Community College-level education)*	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
Audio and Video Equipment Technicians	Postsecondary nondegree award	46%	205	73%	6%	21%
Sound Engineering Technicians	Postsecondary nondegree award	46%	45	13%	4%	83%

Occupation	Typical Entry-Level Education Requirement	Educational Attainment (Percent holding a Community College-level education)*	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
Makeup Artists, Theatrical and Performance	Postsecondary nondegree award	29%	12	92%	-	8%
Set and Exhibit Designers	Bachelor's degree	29%	10	30%	10%	60%
Costume Attendants	High school diploma or equivalent	37%	4	75%	-	25%
Motion Picture Projectionists	No formal education credential	40%	7	100%	-	-

Source: EMSI 2018.1, Current Population Survey, Burning Glass – Labor Insights

\*Community college-level education is the combined percentage of incumbent workers 25 years or older with some college, no degree or an associate degree.

## Industry

Exhibit 9 displays the industries that employ the most technical theater occupations in Los Angeles, Orange, Riverside, and San Bernardino counties. Staffing patterns show the industries that employ the most of a specific occupation. The motion picture and video industry employ the most individuals in the technical theater occupational group.

*Exhibit 9: Top Industries employing each technical theater occupation the combined Los Angeles/Orange County and Inland Empire/Desert Region*

Occupation	Top Industries from Staffing Pattern (NAICS)	Industry Classification from Job Ads	
		Number of Job Postings (n=)	Top Industries from Job Ads (NAICS)
Audio and Video Equipment Technicians	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 54%</li> </ul>	237	<ul style="list-style-type: none"> <li>Traveler Accommodation (7211)</li> <li>Colleges, Universities, and Professional Schools (6113)</li> </ul>
Sound Engineering Technicians	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 52%</li> <li>Sound Recording Industries (5122) 26%</li> </ul>	72	<ul style="list-style-type: none"> <li>Software Publishers (5112)</li> <li>Motion Picture and Video Industries (5121)</li> </ul>
Makeup Artists, Theatrical and Performance	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 81%</li> </ul>	41	<ul style="list-style-type: none"> <li>Personal Care Services (8121)</li> </ul>
Set and Exhibit Designers	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 64%</li> <li>Independent Artists, Writers, and Performers (7115) 11%</li> </ul>	8	<ul style="list-style-type: none"> <li>Radio and Television Broadcasting (5151)</li> </ul>
Costume Attendants	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 56%</li> <li>Amusement Parks and Arcades (7131) 17%</li> </ul>	7	<ul style="list-style-type: none"> <li>Traveler Accommodation (7211)</li> </ul>
Motion Picture Projectionists	<ul style="list-style-type: none"> <li>Motion Picture and Video Industries (5121) 88%</li> </ul>	9	<ul style="list-style-type: none"> <li>Restaurants and Other Eating Places (7225)</li> </ul>

Source: EMSI 2018.1, Burning Glass – Labor Insights

## Student Completions

Exhibit 10 shows the annual average regional community college awards (associate degrees and certificates) conferred during the three academic years between 2014 and 2017, with the relevant TOP code. Please note, an award 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 was obtained from the CTE LaunchBoard based on the selected TOP code(s) and region.

*Exhibit 10: Annual average community college student completions for the technical theater program in the Inland Empire/Desert Region*

<b>1006.00 – Technical Theater</b>	<b>Annual Community College Headcount (2016-17)</b>	<b>Community College Annual Average Awards (2014-17)</b>
<b>Chaffey</b>	156	
<b>Crafton Hills</b>	30	
<b>Mt. San Jacinto</b>	55	
Associate Degree		1
Certificate 30 to < 60 semester units		2
<b>Riverside</b>	62	
<b>San Bernardino</b>	17	
<b>Victor Valley</b>	34	
<b>Total CC Headcount (2016-17)</b>	<b>354</b>	
<b>Total annual average community college awards</b>		<b>3</b>

Source: LaunchBoard, IPEDS

**1006.00 – Technical theater program outcomes in the Inland Empire/Desert Region in the academic year 2015-16:**

- Number of course enrollments: 497 (California median: 560)\*
- Number of students who transferred to a 4-year institution: 16 (CA: 23)
- Employed in the second fiscal quarter after exit: N/A (CA: 70%)
- Median earnings in the second fiscal quarter after exit: \$3,635 (CA:\$3,961)
- Employed in the fourth fiscal quarter after exit: N/A (CA: 70%)
- Median annual earnings: \$12,174 (CA: \$14,879)
- The percentage in a job closely related to the field of study: N/A (CA: 38%) [2014-15]
- Median change in earnings: 34,224% (CA: 170%)
- The proportion of students who attained a living wage: N/A (CA: 13%)

\*academic year 2016-17



## Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard

Statewide CTE Outcomes Survey

MIT Living Wage Calculator

California Community Colleges Chancellor's Office Management Information Systems (MIS)

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April 2018



## Appendix A: Occupation definitions, five-year projections, and earnings for technical theater occupations

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

#### **Set and Exhibit Designers (27-1027)**

Design special exhibits and movie, television, and theater sets. May study scripts, confer with directors, and conduct research to determine appropriate architectural styles.

**Sample job titles:** Design Chief, Designer, Display Coordinator, Exhibit Designer, Exhibit Preparator, Production Designer, Scenic Designer, Set Decorator, Set Designer, Show Design Supervisor

*Entry-Level Educational Requirement: Bachelor's degree*

*Training Requirement: None*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 29%*

#### **Audio and Video Equipment Technicians (27-4011)**

Set up, or set up and operate audio and video equipment including microphones, sound speakers, video screens, projectors, video monitors, recording equipment, connecting wires and cables, sound and mixing boards, and related electronic equipment for concerts, sports events, meetings and conventions, presentations, and news conferences. May also set up and operate associated spotlights and other custom lighting systems.

**Sample job titles:** Audio Technician, Audio Visual Specialist, Audio Visual Technician, Audio/Visual Manager, Broadcast Engineer, Master Control Operator (MCO), Operations Technician, Production Assistant, Stagehand, Videographer

*Entry-Level Educational Requirement: Postsecondary nondegree award*

*Training Requirement: Less than one month on-the-job training*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 46%*



### **Sound Engineering Technicians (27-4014)**

Operate machines and equipment to record, synchronize, mix, or reproduce music, voices, or sound effects in sporting arenas, theater productions, recording studios, or movie and video productions.

**Sample job titles:** Audio Engineer, Audio Operator, Broadcast Engineer, Broadcast Technician, Master Control Operator, Mixer, Recording Engineer, Sound Editor, Sound Engineer, Sound Technician

*Entry-Level Educational Requirement: Postsecondary nondegree award*

*Training Requirement: Less than one month on-the-job training*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 46%*

### **Motion Picture Projectionists (39-3021)**

Set up and operate motion picture projection and related sound reproduction equipment.

**Sample job titles:** Booth Manager, Booth Operator, Booth Supervisor, Booth Usher, Motion Picture Projectionist, Movie Projectionist, Projection Technician, Projectionist, Projector Booth Operator

*Entry-Level Educational Requirement: No formal educational credential*

*Training Requirement: Less than one month on-the-job training*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 40%*

### **Costume Attendants (39-3092)**

Select, fit, and take care of costumes for cast members, and aid entertainers. May assist with multiple costume changes during performances.

**Sample job titles:** Costume Draper, Costume Seamstress, Costume Shop Manager, Costumer, Draper, Dresser, Wardrobe Assistant, Wardrobe Attendant, Wardrobe Manager, Wardrobe Supervisor

*Entry-Level Educational Requirement: High school diploma or equivalent*

*Training Requirement: Less than one month on-the-job training*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 37%*

Technical Theater Occupations in the combined Los Angeles/Orange County and Inland Empire/Desert Region, April 2018

### Makeup Artists, Theatrical and Performance (39-5091)

Apply makeup to performers to reflect period, setting, and situation of their role.

**Sample job titles:** Commercial Makeup Artist, Hair and Makeup Designer, Makeup Artist, Prosthetic Makeup Designer, Special Effects Makeup Artist

*Entry-Level Educational Requirement: Postsecondary nondegree award*

*Training Requirement: None*

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 29%*

Table 1. 2017 to 2022 job growth for the technical theater occupational group in the Inland Empire/Desert Region

Occupation (SOC)	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Audio and Video Equipment Technicians (27-4011)	685	764	79	12%	403	81
Sound Engineering Technicians (27-4014)	117	122	5	4%	60	12
Set and Exhibit Designers (27-1027)	77	82	5	6%	41	8
Makeup Artists, Theatrical and Performance (39-5091)	27	30	3	11%	19	4
Costume Attendants (39-3092)	20	22	2	10%	26	5
Motion Picture Projectionists (39-3021)	10	14	4	40%	12	2
<b>Total</b>	<b>937</b>	<b>1,034</b>	<b>97</b>	<b>10%</b>	<b>561</b>	<b>112</b>

Source: EMSI 2018.1

Table 2. 2017 to 2022 job growth for the technical theater occupational group in Los Angeles/Orange County

Occupation (SOC)	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Audio and Video Equipment Technicians (27-4011)	11,688	12,774	1,086	9%	6,575	1,315
Sound Engineering Technicians (27-4014)	4,471	4,678	207	5%	2,264	453
Set and Exhibit Designers (27-1027)	2,937	3,147	210	7%	1,609	322
Makeup Artists, Theatrical and Performance (39-5091)	1,780	2,076	296	17%	1,358	272
Costume Attendants (39-3092)	1,499	1,586	87	6%	1,815	363
Motion Picture Projectionists (39-3021)	187	184	(3)	(2%)	121	24
<b>Total</b>	<b>22,562</b>	<b>24,445</b>	<b>1,883</b>	<b>8%</b>	<b>13,742</b>	<b>2,748</b>

Source: EMSI 2018.1

Table 3. 2017 to 2022 job growth for the technical theater occupational group in the combined Inland Empire/Desert and Los Angeles/Orange County region

Occupation (SOC)	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Audio and Video Equipment Technicians (27-4011)	12,373	13,538	1,165	9%	6,979	1,396
Sound Engineering Technicians (27-4014)	4,588	4,801	213	5%	2,325	465
Set and Exhibit Designers (27-1027)	3,013	3,229	216	7%	1,650	330
Makeup Artists, Theatrical and Performance (39-5091)	1,808	2,106	298	16%	1,377	275
Costume Attendants (39-3092)	1,519	1,608	89	6%	1,841	368
Motion Picture Projectionists (39-3021)	198	198	0	0%	133	27
<b>Total</b>	<b>23,498</b>	<b>25,479</b>	<b>1,981</b>	<b>8%</b>	<b>14,303</b>	<b>2,861</b>

Source: EMSI 2018.1

Technical Theater Occupations in the combined Los Angeles/Orange County and Inland Empire/Desert Region, April 2018