

Technical Theater Entertainment Technology

Inland Empire/Desert region (Riverside and San Bernardino counties combined) & Los Angeles and Orange counties

Summary

- Employment for the technical theater occupational group is expected to increase by 7% between
 2018 and 2023 in the Inland Empire/Desert region. A total of 528 job openings will be available over the five-year timeframe.
- The median wage for each occupation in the technical theater occupational group is above the MIT Living Wage estimate of \$12.39 per hour for a single adult living in the Inland Empire/Desert region.
- There appears to be an opportunity for program expansion, but the COE recommends that colleges use caution. Please see the recommendation section for more details.

Introduction

The California Community College technical theater program (TOP 1006.00) prepares students for employment by providing the techniques of communicating information, ideas, moods, and feelings through set and design and construction and costuming with attention to stagecraft, function, and esthetics (Taxonomy of Programs, 2012). Los Angeles and Orange counties (LA/OC) are included in the demand analyses of this report due to the proximity to the Inland Empire/Desert region (IEDR), and the increased job opportunities. For this occupational group, there are nearly 15 times more job openings in the LA/OC than there are in the IEDR. The occupations included in the technical theater occupational group are the following:

- Audio and Video Equipment Technicians
- Set and Exhibit Designers
- Sound Engineering Technicians

Job Opportunities

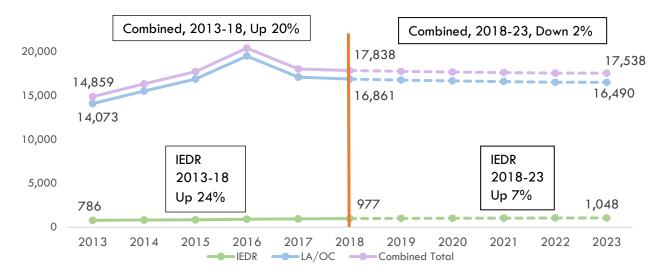
In 2018, there were 977 jobs in the technical theater occupational group in the IEDR. This occupational group is projected to increase employment by 7% by 2023. There will be 528 projected job openings over the next five years to fill new jobs and backfill jobs that workers are permanently vacating (includes occupational transfers and retirements). Exhibits 1 & 2 display five-year projections for the technical theater occupational group in the IEDR and in LA/OC. Tables 1, 2, & 3, at the end of this report, display growth for each occupation, by region in the technical theater group.



Exhibit 1: Five-year projections for the technical theater occupational group

Region	2018 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
IEDR	977	7%	528	106	16%
LA/OC	16,861	(2%)	<i>7,</i> 868	1,574	18%
Combined Total	17,838	(2%)	8,396	1,679	18

Exhibit 2: Historical and projected jobs for the technical theater occupational group, 2013-2023



Source: EMSI 2019.3

Earnings

The median wage for each occupation in the technical theater occupational group is above the MIT Living Wage estimate of \$12.39 per hour for a single adult living in the IEDR, \$25,775 annually. This wage is also sufficient for two working adults and one child (\$14.75 per hour, per adult, or \$30,680 annually for each adult) (Glasmeier, 2019). Wages are higher in the LA/OC than the IEDR, which is in line with the higher MIT Living Wage estimates there (\$14.71 per hour for a single adult and \$16.58 per hour, per adult for two working adults and one child). Exhibit 3 displays wage information for the technical theater occupational group in the IEDR and in LA/OC.



Exhibit 3: Earnings for the technical theater occupational group

Region	Occupation	Entry to Experienced Hourly Wage Range (25th to 75th percentile)	Median Wage (50 th percentile)	Average Annual Earnings
IEDR Living Wage \$12.39/hour	Audio and Video Equipment Technicians	\$14.20 to \$28.82	\$18.62	\$47,800
	Set and Exhibit Designers	\$13.83 to \$30.84	\$18.46	\$61,500
**=::*/	Sound Engineering Technicians	\$11.28 to \$28.30	\$15.30	\$52,100
/0.5	Audio and Video Equipment Technicians	\$16.08 to \$35.21	\$22.16	\$58,500
LA/OC Living Wage \$14.71/hour	Set and Exhibit Designers	\$21.18 to \$41.79	\$29.09	\$73,500
	Sound Engineering Technicians	\$17.09 to \$51.08	\$30.48	\$79,900

An alternative way to determine what wages workers can expect to earn is by extracting wage information from online job postings. Exhibit 4 displays advertised salary data from real-time job postings for technical theater skills over the last 12 months. The mean real-time salary for technical theater occupations is \$49,000 in the IEDR and \$55,000 in the LA/OC. The mean advertised salary for theater occupations is \$6,000 higher in the LA/OC than in the IEDR. This information should be viewed with caution, as only 35% of job postings mentioned salary information. Please note that salary figures are prorated to reflect full-time, annual wage status. For reference, the MIT Living Wage estimate for a single adult living in the IEDR is \$12.39 per hour, or \$25,775 annually (Glasmeier, 2019). There are too few postings for sound engineering technicians and set and exhibit designers in the IEDR to report reliable wage information.

Exhibit 4: Advertised salary information, Aug 2018 – Jul 2019

			Real-Ti	ime Salary Info	rmation	
Region	Occupation	Number of job postings	Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000
	Audio and Video Equipment Technicians	15	33%	27%	27%	13%
IEDR	Sound Engineering Technicians	7	N/A	N/A	N/A	N/A
	Set and Exhibit Designers	0	N/A	N/A	N/A	N/A
	Audio and Video Equipment Technicians	301	17%	39%	29%	15%
LA/OC	Sound Engineering Technicians	97	9%	22%	33%	36%
	Set and Exhibit Designers	42	47%	19%	29%	5%

Source: Burning Glass - Labor Insights



Job Postings, Employers, Skills, Education, Industry, and Salary

Exhibit 5 displays the number of job ads posted during the last 12 months along with the regional and statewide average time to fill for the technical theater occupational group in the IEDR and LA/OC. There are significantly more job postings for technical theater occupations in the LA/OC than IEDR, accounting for 93% of total postings. On average, employers in the IEDR fill online job postings for the technical theater occupational group within 88 days. This average is 41 days longer than the statewide average and 50 days longer than the LA/OC average, indicating that local employers face more challenges when seeking candidates to fill these positions than other California employers outside the IEDR.

Exhibit 5: Job ads and time to fill for the technical theater occupational group, Aug 2018 – Jul 2019

Region	Occupation	Job Ads	Regional Average Time to Fill (Days)	California Average Time to Fill (Days)
	Audio and Video Equipment Technicians	69	82	44
IEDR	Sound Engineering Technicians	23	107	58
IEDK	Set and Exhibit Designers	2	56	30
	IEDR Total	94	88	47
	Audio and Video Equipment Technicians	828	36	44
14/00	Sound Engineering Technicians	347	47	58
LA/OC	Set and Exhibit Designers	69	25	30
	LA/OC Total	1,244	38	47
Total for	both regions combined	1,338	-	-

Source: Burning Glass - Labor Insights



Exhibit 6 displays the employers posting the most job ads for the technical theater occupational group during the last 12 months in the IEDR. There are too few postings for set and exhibit designers in the IEDR to report reliable employer information.

Exhibit 6: Employers posting the most job ads for the technical theater occupations, Aug 2018 – Jul 2019

Region	Occupation	Employers
IEDR	Audio and Video Equipment Technicians (n=66)	Live Nation WorldwidePSAVFreeman
	Sound Engineering Technicians (n=14)	Live Nation WorldwideSan Bernardino Community CollegeTaft Broadcasting Company
	Set and Exhibit Designers (n=2)	• N/A
	Audio and Video Equipment Technicians (n=648)	PSAVFive-Star Audio VisualFreeman
LA/OC	Sound Engineering Technicians (n=240)	ActivisionExtron ElectronicsChapman University
	Set and Exhibit Designers (n=51)	OC Fair and Event CenterExhibit Options

Source: Burning Glass – Labor Insights



Exhibit 7 displays a sample of specialized and employability skills that employers are seeking when looking for workers to fill positions in the technical theater occupational group. Specialized skills are occupation-specific skills that 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 requested in job postings may be utilized as a helpful guide for curriculum development. There are too few postings for set and exhibit designers in the IEDR to report reliable skills information.

Exhibit 7: In-demand skills from employer job ads for the technical theater occupations, Aug 2018 – Jul 2019

Region	Occupation	Specialized Skills	Employability Skills
	Audio and Video Equipment Technicians (n=63)	RepairCustomer ServiceAudio Engineering	Communication SkillsTroubleshootingPhysical Abilities
IEDR	Sound Engineering Technicians (n=16)	RepairAudio SystemsCabling	Communication SkillsPhysical AbilitiesBuilding Effective Relationships
	Set and Exhibit Designers (n=2)	• N/A	• N/A
	Audio and Video Equipment Technicians (n=726)	Equipment OperationCustomer ServiceScheduling	TroubleshootingCommunication SkillsBuilding Effective Relationships
LA/OC	Sound Engineering Technicians (n=271)	 Broadcast Industry Knowledge Digital Signal Processing (DSP) Music 	Communication SkillsTroubleshootingEditing
	Set and Exhibit Designers (n=46)	PaintingCustomer ServiceCarpentry	Communication SkillsCreativityTeamwork/Collaboration

Source: Burning Glass - Labor Insights

Exhibit 8 displays the entry-level education typically required to enter each occupation according to the Bureau of Labor Statistics (BLS), educational attainment for incumbent workers with "some college, no degree" and an "associate degree" according to the U.S. Census (2016-17), and the minimum advertised education requirement from employer job ads. There are too few postings for *set and exhibit designers* in the IEDR to display reliable minimum advertised education requirement information.



Exhibit 8: Typical entry-level education, educational attainment, and minimum advertised education requirements for the technical theater occupational group in the IEDR and LA/OC, Aug 2018 – Jul 2019

	ms for the rechnice	,		Minimum Advertised Education Requirement from Job Ads				
Region	Occupation	Typical Entry-Level Education Requirement	Educational Attainment*	Number of Job Ads (n=)	High school diploma or vocational training	Associate degree	Bachelor's degree or higher	
	Audio and Video Equipment Technicians	Postsecondary nondegree award	44%	45	91%	-	9%	
IEDR	Sound Engineering Technicians	Postsecondary nondegree award	44%	11	64%	9%	27%	
	Set and Exhibit Designers	Bachelor's degree	29%	0	N/A	N/A	N/A	
	Audio and Video Equipment Technicians	Postsecondary nondegree award	44%	453	60%	9%	31%	
LA/OC	Sound Engineering Technicians	Postsecondary nondegree award	44%	160	21%	6%	73%	
	Set and Exhibit Designers	Bachelor's degree	29%	18	28%	5%	67%	

Source: EMSI 2019.3, Burning Glass – Labor Insights

Exhibit 9 displays the industries that employ the most technical theater workers in the IEDR and LA/OC. There are too few postings to display reliable industry data for set and exhibit designers in the IEDR.

^{*}Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework



Exhibit 9: Top industries employing technical theater occupations

Region	Occupation	Top Industries from Staffing Pattern (NAICS*)	Top Industries from Job Ads (NAICS*)
	Audio and Video Equipment Technicians (n=49)	 Commercial and Industrial Machinery and Equipment Rental and Leasing (5324) Education and Hospitals (9036) 	 Gambling Industries (7132) Colleges, Universities, and Professional Schools (6113)
IEDR	Sound Engineering Technicians (n=18)	 Sound Recording Industries (5122) Motion Picture and Video Industries (5121) 	 Radio and Television Broadcasting (5151) Promoters of Performing Arts, Sports, and Similar Events (7113)
	Set and Exhibit Designers (n=0)	 Specialized Design Services (5414) Independent Artists, Writers, and Performers (7115) 	• N/A
	Audio and Video Equipment Technicians (n=392)	 Motion Picture and Video Industries (5121) Independent Artists, Writers, and Performers (7115) 	 Building and Finishing Contractors (2383) Traveler Accommodation (7211)
LA/OC	Sound Engineering Technicians (n=188)	 Motion Picture and Video Industries (5121) Sound Recording Industries (5122) 	 Colleges, Universities, and Professional Schools (6113) Employment Services (5613)
	Set and Exhibit Designers (n=14)	 Motion Picture and Video Industries (5121) Independent Artists, Writers, and Performers (7115) 	 Agencies, Brokerages, and Other Insurance Related Activities (5242) Motion Picture and Video Industries (5121)

Source: Burning Glass - Labor Insights

Student Completions and Program Outcomes

Exhibit 10 displays the annual average regional California Community College (CCC) credentials conferred during the three academic years between 2014 and 2017, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, along with the enrollments from the most recent year available on LaunchBoard for the technical theater (TOP 1006.00) program. Credentials are the combined total of associate degrees and certificates issued during the timeframe, divided by three to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year. Enrollments are the count of enrollments in courses assigned to the TOP code in the selected year. The relevant TOP code is from the Taxonomy of Programs manual, and the

^{*}NAICS = North American Industry Classification System



corresponding program titles used at each college (in *italics*) are sourced from the Chancellor's Office Curriculum Inventory (COCI). Please note, a credential is not always equal to a single person in search of a job opening since a student may earn more than one credential, such as an associate degree in addition to a certificate.

Exhibit 10: Annual average community college credentials and enrollments for the technical theater program

in the Inland Empire/Desert region

1006.00 — Technical Theater	CCC Enrollments, Academic Year 2016-17	CCC Annual Average Credentials, Academic Years 2014-17
Chaffey — Technical Theatre	243	0
Crafton Hills	44	0
Mt. San Jacinto — Technical Theater	72	
Associate degree		1
Certificate 30 to < 60 semester units		2
Riverside City – Theatre Arts	80	0
San Bernardino Valley	20	0
Victor Valley	38	0
Total CCC Enrollments, Academic Year 2016-17	497	
Total Annual Average CCC Credentials, Academic Years 2014-17		3

Source: LaunchBoard, MIS Data Mart, COCI

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges

Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development

Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2019a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2017). Data from the latest academic year for each metric is provided in Exhibit 11.



Exhibit 11: 1006.00 - Technical theater strong workforce program outcomes

Strong Workforce Program Metrics: 1006.00 – Technical Theater, Academic Year 2015-16, unless noted otherwise	Inland Empire/ Desert region	California Median
Course enrollments (2016-17)	497	96
Completed 12+ units in one year (2016-17)	21	15
Economically disadvantaged students* (2016-17)	77%	68%
Transferred to a 4-year institution	16	14
Employed in the fourth fiscal quarter after exit (all exiters)	73%	75%
Median annual earnings* (all exiters, 2014-15)	\$10,639	\$13,195
Median change in earnings (all exiters)	N/A**	117%
Attained a living wage (completers and skills-builders)	N/A***	0%

Source: LaunchBoard

Recommendation

The Technical theater program (TOP 1006.00) prepares students for employment by providing the techniques of communicating information, ideas, moods, and feelings through set and design and construction and costuming with attention to stagecraft, function, and esthetics. Occupations related to the technical theater program are expected to have a combined, 106 annual job openings in the Inland Empire/Desert region over the next five years.

Six regional community college have technical theater programs, but only one has produced three annual average completions over the last three academic years. The lack of program completions and the demand for jobs in the region suggests there may be room for further program expansion in the region, but with some cautions.

Colleges considering new program should take into account that there were 497 program enrollments in the 2016-17 academic year across the region; more students are enrolled in this program than job opportunities available (106 annual job openings). As mentioned, 15 times more job opening are available in neighboring Los Angeles and Orange counties, students willing to travel outside of the region should be able to find employment. Please note, new job growth for technical theater programs is

^{*}Data for these metrics is available in Community College Pipeline. All others are available in Strong Workforce Program Metrics

^{**}Due to limitations related to program size, the most recent data available is from 2012-13, when the median change in earnings for 10 students was 64%.

^{***}Due to limitations related to program size, no data is available for the proportion of students earning a living wage for any program year dating back to 2011-12.



projected to decline by two percent over the next five years. This study also did not examine the competing training programs available in outside regions. The average median annual earnings of \$10,639 for students exiting this program was low in 2014-15, well below the self-sustainable \$25,775 annual earnings necessary in the region. Colleges should consider partnering with local employers to understand their demand for more workers and the skills, knowledge, and abilities needed for self-sustainable and gainful employment.

References

Burning Glass Technologies. (2019). Labor Insights/Jobs. Retrieved from https://www.burning-glass.com/

- California Community Colleges Chancellor's Office. LaunchBoard. (2019). California Community Colleges LaunchBoard. Retrieved from https://www.calpassplus.org/Launchboard/Home.aspx
- California Community Colleges Chancellor's Office. LaunchBoard. (2019a). Strong Workforce Program Metrics Data Element Dictionary. Pg. 3. Retrieved from https://www.calpassplus.org/MediaLibrary/calpassplus/launchboard/Documents/SWP-DED.PDF
- California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. (2019). Data Mart. Retrieved from https://datamart.ccco.edu/datamart.aspx
- California Community Colleges Chancellor's Office, Curriculum and Instructional Unit, Academic Affairs Division. (2012). Taxonomy of Programs, 6th Edition, Corrected Version. Retrieved from https://www.cccco.edu/-/media/CCCCO-Website/Files/Educational-Services-and-Support/x topmanual6200909corrected12513ada.ashx
- Economic Modeling Specialists International (EMSI) (2019). Datarun 2019.3. Retrieved from https://www.economicmodeling.com/
- Glasmeier, A. Massachusetts Institute of Technology (MIT). (2019). Retrieved from http://livingwage.mit.edu/
- National Center for O*NET Development. (2019). O*NET OnLine. Retrieved from https://www.onetonline.org/

Contact

Michael Goss, Director Center of Excellence, Inland Empire/Desert region michael.goss@chaffey.edu August 2019



Appendix: Occupation definitions, sample job titles, five-year projections for technical theater occupations

Occupation Definitions (SOC) code), Education and Training Requirement, Community College Educational 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 (AV Specialist), Audio Visual Technician (AV Technician), Master Control Operator (MCO), Media Specialist, Media Technician, Multimedia Educational Specialist, Operations Technician, Stagehand, Video 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: 44%

Technical Theater Entertainment Technology in the Inland Empire/Desert region & Los Angeles and Orange counties, August 2019



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 Engineer, Sound Technician, Studio Engineer

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:

44%



Table 1: 2018 to 2023 job growth, wages, education, training, and work experience required for the technical theater occupational group, Inland Empire/Desert region

Occupation (SOC)	2018 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Audio and Video Equipment Technicians (27-4011)	718	61	8%	80	\$14.20 to \$28.82	\$18.62	\$47,800	Postsecondary nondegree award & 1 month	None
Sound Engineering Technicians (27-4014)	175	4	2%	17	\$11.28 to \$28.30	\$15.30	\$52,100	Postsecondary nondegree award & 1 month	None
Set and Exhibit Designers (27-1027)	84	5	6%	9	\$13.83 to \$30.84	\$18.46	\$61,500	Bachelor's degree & None	None
Total	977	7 1	7 %	106	-	-	-	-	-

Table 2: 2018 to 2023 job growth, wages, education, training, and work experience required for the technical theater occupational group, Los Angeles and Orange counties

Occupation (SOC)	2018 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry- Experienced Hourly Wage (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Audio and Video Equipment Technicians (27-4011)	10,326	(2)	(0%)	979	\$16.23 to \$35.68	\$22.42	\$59,300	Postsecondary nondegree award & 1 month	None
Sound Engineering Technicians (27-4014)	4,260	(249)	(6%)	383	\$17.82 to \$51.65	\$31.1 <i>7</i>	\$81,100	Postsecondary nondegree award & 1 month	None
Set and Exhibit Designers (27-1027)	2,274	(119)	(5%)	211	\$21.67 to \$42.06	\$29.37	\$73,900	Bachelor's degree & None	None
Total	16,861	(371)	(2%)	1,574	-	-	-	-	-

Source: EMSI 2019.3



Table 3: 2018 to 2023 job growth, wages, education, training, and work experience required for the technical theater occupational group, Inland Empire/Desert region and Los Angeles and Orange counties combined

Occupation (SOC)	2018 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry- Experienced Hourly Wage (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Audio and Video Equipment Technicians (27-4011)	11,045	59	1%	1,058	\$16.08 to \$35.21	\$22.16	\$58,600	Postsecondary nondegree award & 1 month	None
Sound Engineering Technicians (27-4014)	4,435	(245)	(6%)	400	\$17.09 to \$51.08	\$30.48	\$79,900	Postsecondary nondegree award & 1 month	None
Set and Exhibit Designers (27-1027)	2,358	(114)	(5%)	220	\$21.18 to \$41.79	\$29.09	\$73,500	Bachelor's degree & None	None
Total	17,838	(300)	(2%)	1,679	-	-	-	-	-