

## Program Endorsement Brief: 0999.00/Other Engineering and Related Industrial Technologies

### Process Technician Fundamentals

Orange County Center of Excellence, April 2021

---

#### Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met	<input checked="" type="checkbox"/>	Endorsed: Some Criteria Met	<input type="checkbox"/>	Not Endorsed	<input type="checkbox"/>
<b>Program Endorsement Criteria</b>						
Supply Gap:	Yes	<input checked="" type="checkbox"/>		No	<input type="checkbox"/>	
Living Wage: (Entry-Level, 25 <sup>th</sup> )	Yes	<input checked="" type="checkbox"/>		No	<input type="checkbox"/>	
Education:	Yes	<input checked="" type="checkbox"/>		No	<input type="checkbox"/>	
<b>Emerging Occupation(s)</b>						
Yes	<input checked="" type="checkbox"/>		No	<input 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: *industrial engineering technologists and technicians* (17-3026), and *calibration technologists and technicians and engineering technologists and technicians, except drafters, all other* (17-3098). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.<sup>1</sup> 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 these process technician occupations in the region. Furthermore, Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for the occupations in this report, and entry-level wages exceed the living wage in both Los Angeles and Orange counties. **Therefore, due to all 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 **397 jobs available annually** in the region due to new job growth and replacements, **which is more than the 130 awards conferred annually** by educational institutions in the region.
  - However, the calibration technologists and technicians and engineering technologists and technicians, except drafters, all other (17-3098) SOC code

<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.

- includes a variety of technician and technologist occupations. Since the SOC code does not solely represent industrial and/or process technicians, ***the number of annual job openings is likely overstated.***
- Over the past 12 months, there were **1,116 online job postings that specifically mention process technicians**. The highest number of job postings were for manufacturing technicians, maintenance technicians, production technicians, engineering technicians, and process technicians.
  - **Living Wage Criteria** – Within Orange County, **all of the annual job openings** for these process technician occupations have **entry-level wages above the county's living wage** (\$17.36/hour).<sup>2</sup>
  - **Educational Criteria** –The Bureau of Labor Statistics (BLS) lists an **associate degree** as the **typical entry-level education for these process technician occupations**.
    - Furthermore, the national-level educational attainment data indicates **50.8% of workers in the field have completed some college or an associate degree**.

#### **Supply:**

- There are **12 community colleges** in the LA/OC region that issue awards related to industrial and/or process technicians, conferring an average of **127 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **3 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 these process technician occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 1% through 2024. However, there will be nearly 400 job openings per year through 2024 due to retirements and workers leaving the field. It is important to note that the *calibration technologists and technicians and engineering technologists and technicians, except drafters, all other (17-3098)* SOC code includes a variety of technician and technologist occupations and not solely industrial and/or process technicians. Therefore, the data in Exhibit 1 is likely overstated for process technicians.

*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.*

---

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 4/12/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

### **Exhibit 1: 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	3,036	2,982	(54)	(2%)	252
Orange	1,669	1,686	17	1%	145
<b>Total</b>	<b>4,706</b>	<b>4,668</b>	<b>(38)</b>	<b>(1%)</b>	<b>397</b>

#### **Wages**

The labor market endorsement in this report considers the entry-level hourly wages for these process technician occupations 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 process technician 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 \$23.51 and \$23.82. Experienced workers can expect to earn wages between \$39.93 and \$43.11, which are higher than the living wage estimate. Orange County's average wages are above the average statewide wage of \$30.37 for these occupations.

**Los Angeles County**— All of the annual openings for these process technician 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 \$22.43 and \$23.12. Experienced workers can expect to earn wages between \$39.64 and \$40.84, which are higher than the living wage estimate. Los Angeles County's average wages are above the average statewide wage of \$30.37 for these occupations.

#### **Job Postings**

There were 1,116 online job postings that specifically mention *process technicians* listed in the past 12 months. The highest number of job postings were for manufacturing technicians, maintenance technicians, production technicians, engineering technicians, and process technicians. The top skills were: repair, cleaning, machinery, predictive/preventative maintenance, and manufacturing processes. The top three employers, by number of job postings, in the region were: SpaceX, Oakley Incorporated, and Vanderlande Industries.

*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 an associate degree as the typical entry-level education for these process technician occupations. Furthermore, the national-level educational attainment

<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.

data indicates 50.8% of workers in the field have completed some college or an associate degree. Of the 72% of process technician-related job postings listing a minimum education requirement in Los Angeles/Orange County, 72% (582) requested a high school diploma, 17% (141) requested a bachelor's degree and 10% (83) requested an associate degree.

### **Educational Supply**

**Community College Supply**—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Manufacturing and Industrial Technology (0956.00), and Other Engineering and Related Industrial Technologies (0999.00). The colleges with the most completions in the region are: Coastline, Santiago Canyon, Mt. San Antonio, and LA Trade-Tech. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

**Exhibit 2: 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	
0956.00	Manufacturing and Industrial Technology	Cerritos	3	6	2	4	
		Compton	-	2	-	1	
		El Camino	3	3	2	3	
		LA Trade	-	-	5	2	
		LA Valley	4	2	3	3	
		Mt San Antonio	19	9	13	14	
		<b>LA Subtotal</b>	<b>29</b>	<b>22</b>	<b>25</b>	<b>25</b>	
		Fullerton	3	11	9	8	
		Irvine	7	1	3	4	
		Saddleback	5	9	11	8	
		Santa Ana	-	1	-	0	
		Santiago Canyon	-	27	41	23	
		<b>OC Subtotal</b>	<b>15</b>	<b>49</b>	<b>64</b>	<b>43</b>	
<b>Supply Subtotal/Average</b>			44	71	89	68	
0999.00	Other Engineering and Related Industrial Technologies	LA Trade	16	17	-	11	
		<b>LA Subtotal</b>	<b>16</b>	<b>17</b>	<b>0</b>	<b>11</b>	
		Coastline	39	49	57	48	
		<b>OC Subtotal</b>	<b>39</b>	<b>49</b>	<b>57</b>	<b>48</b>	
<b>Supply Subtotal/Average</b>			55	66	57	59	
<b>Supply Total/Average</b>			<b>99</b>	<b>137</b>	<b>146</b>	<b>127</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 process technician occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by this institution in the related Classification of Instructional

Programs (CIP) Code: Manufacturing Engineering Technology/Technician (15.0613). 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 three awards annually in related training programs.

**Exhibit 3: Regional non-community college awards, 2014-2017**

CIP Code	Program	College	2014-	2015-	2016-	3-Year
			2015 Awards	2016 Awards	2017 Awards	Award Average
15.0613	Manufacturing Engineering Technology/Technician	California State University-Long Beach	2	5	2	3
<b>Supply Total/Average</b>			<b>2</b>	<b>5</b>	<b>2</b>	<b>3</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)
Industrial Engineering Technologists and Technicians (17-3026)	576	582	6	1%	50	\$23.82	\$31.56	\$43.11
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	1,094	1,104	10	1%	95	\$23.51	\$29.95	\$39.93
<b>Total</b>	<b>1,669</b>	<b>1,686</b>	<b>17</b>	<b>1%</b>	<b>145</b>			

**Exhibit 5. Los Angeles County**

<b>Occupation (SOC)</b>	<b>2019 Jobs</b>	<b>2024 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Entry- Level Hourly Earnings (25th Percentile)</b>	<b>Median Hourly Earnings</b>	<b>Experienced Hourly Earnings (75th Percentile)</b>
Industrial Engineering Technologists and Technicians (17-3026)	935	911	(23)	(3%)	77	\$22.43	\$29.82	\$40.84
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	2,102	2,071	(31)	(1%)	175	\$23.12	\$29.62	\$39.64
<b>Total</b>	<b>3,036</b>	<b>2,982</b>	<b>(54)</b>	<b>(2%)</b>	<b>252</b>			

**Exhibit 6. Los Angeles and Orange Counties**

<b>Occupation (SOC)</b>	<b>2019 Jobs</b>	<b>2024 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>
Industrial Engineering Technologists and Technicians (17-3026)	1,510	1,493	(17)	(1%)	127
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	3,196	3,175	(20)	(1%)	270
<b>Total</b>	<b>4,706</b>	<b>4,668</b>	<b>(38)</b>	<b>(1%)</b>	<b>397</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)

For more information, please contact:

Jesse Crete, Ed. D., Director  
Center of Excellence, Orange County  
[crete\\_jesse@rsccd.edu](mailto:crete_jesse@rsccd.edu)



April 2021