CENTER OF EXCELLENCE FOR LABOR MARKET RESEARCH
LOS ANGELES

# Labor Market Analysis: 0924.00 - Engineering Technology

## *Engineering Design Technology: Basic Knowledge*

***Certificate requiring 6 to <18 semester units***

Los Angeles Center of Excellence, June 2025

| **Program Endorsement:** | **Endorsed: All Criteria Met** ☐ | **Endorsed: Some Criteria Met** ☒ | **Not Endorsed** ☐ |
|---|---|---|---|

| **Program Endorsement Criteria** | | |
|---|---|---|
| **Supply Gap:** | Yes ☐ | No ☑ (see summary) |
| **Living Wage:** (Entry-Level, 25th) | Yes ☑ | No ☐ |
| **Education:** | Yes ☑ | No ☐ |
| **Emerging Occupation(s)** | | |
| Yes ☐ | | No ☑ |

## SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations[1] or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there does not appear to be a supply gap for the four identified middle-skill occupations in the region. While this program does not meet the traditional supply/demand endorsement criteria, there may be demand for these workers from local employers that is not reflected in traditional labor market data. For this reason, real-time labor market data is included in this report as well – to provide a more nuanced view of the regional job market for these middle-skill engineering occupations. The analysis revealed 2,294 online job postings related to these engineering occupations, nearly three times the number of annual job openings projected, signaling that there may local demand not captured by traditional labor market information. Futher, entry-level wages exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, and all annual openings for the occupations in this report typically require an associate degree.

**<u>Recommendation:</u> Due to two program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.**

[1] Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree. 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.

## Key Findings

***Supply Gap***

- 854 annual job openings are projected in the region through 2028. This number is less than the three-year average of 1,164 awards conferred by educational institutions in the region.

  Over the past 12 months, there were **2,294 online job postings related to these engineering occupations**. The highest number of job postings were for manufacturing technicians, production technicians, engineering technicians, instrument technicians, and automation technicians.

***Living Wage***

- All four engineering occupations have entry-level wages **above** Los Angeles County's self-sufficiency standard hourly wage ($24.03/hour).[2]

***Educational Attainment***

- An associate degree is the typical entry-level education for the middle-skill engineering occupations in this report, according to the Bureau of Labor Statistics (BLS).
- 50%-61% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

***Community college supply***

- 25 community colleges issued awards related to engineering technology in the greater LA/OC region.
- 1,164 awards (degrees and certificates) were conferred on average each year between 2022 and 2024.

***Other postsecondary supply***

- No educational institutions in the LA/OC region have conferred sub-baccalaureate awards in programs related to engineering technology over the past three years.

## TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market and postsecondary supply data related to four middle-skill engineering occupations. For full occupation descriptions, please see Appendix.

- ***Civil Engineering Technologists and Technicians* (17-3022)**[3]
- ***Electrical and Electronic Engineering Technologists and Technicians* (17-3023)**[4]
- ***Industrial Engineering Technologists and Technicians* (17-3026)**[5]
- ***Mechanical Engineering Technologists and Technicians* (17-3027)**[6]

[2] Center for Women's Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024.* http://selfsufficiencystandard.org/California.
[3] Civil Engineering Technologists and Technicians (bls.gov)
[4] Electrical and Electronic Engineering Technologists and Technicians (bls.gov)
[5] Industrial Engineering Technologists and Technicians (bls.gov)
[6] Mechanical Engineering Technologists and Technicians (bls.gov)

## OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these middle-skill engineering occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by less than 1% through 2028. However, there will be more than 850 job openings per year through 2028 due to retirements and workers leaving the field. The majority of jobs in 2023 for these middle-skill engineering occupations (64%) were located in Los Angeles County.

**Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties[7]**

| Geography | 2023 Jobs | 2028 Jobs | 2023-2028 Change | 2023-2028 % Change | Annual Openings |
|---|---|---|---|---|---|
| Los Angeles | 5,706 | 5,576 | (129) | (1%) | 539 |
| Orange | 3,262 | 3,290 | 28 | 2% | 315 |
| **Total** | **8,968** | **8,866** | **(101)** | **0%** | **854** |

## Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. Positive scores for automation resilience[8] reflect a lower-than-average threat of the occupation(s) being replaced by automation, while negative scores reflect a greater-than-average risk of automation. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; occupations with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of impending retirements. On average, 81% of workers across all occupations in California are employed full-time.

**Exhibit 2: Detailed employment and occupational demand, Los Angeles County[9]**

| Occupation | 2023 Jobs | 2028 Jobs | 5-Yr % Change | Annual Openings | Auto-mation Resilience | % Aged 55 and older | % Full Time Workers |
|---|---|---|---|---|---|---|---|
| Civil Engineering Technologists and Technicians | 1,212 | 1,246 | 3% | 118 | 7.6 | 25% | Data unavail. |
| Electrical and Electronic Engineering Technologists and Technicians | 2,760 | 2,600 | (6%) | 261 | 1.4 | 36% | 100% |

[7] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.
[8] Automation risk is calculated based on the percentage of time spent on high-risk compared to low-risk work, the number of high-risk jobs in compatible occupations, and the overall industry automation risk.
[9] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

| Occupation | 2023 Jobs | 2028 Jobs | 5-Yr % Change | Annual Openings | Auto-mation Resilience | % Aged 55 and older | % Full Time Workers |
|---|---|---|---|---|---|---|---|
| Industrial Engineering Technologists and Technicians | 860 | 874 | 2% | 81 | 6.0 | 33% | Data unavail. |
| Mechanical Engineering Technologists and Technicians | 874 | 857 | (2%) | 79 | (9.9) | 31% | Data unavail. |
| **Total** | **5,706** | **5,576** | **(1%)** | **539** | **-** | **-** | **-** |

## WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill engineering occupations in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

### Los Angeles County

All four middle-skill engineering occupations have entry-level wages above the self-sufficiency standard wage for one adult ($24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between $27.07 and $31.11. (Exhibit 3). All occupations have entry-level wages above the self-sufficiency standard wage:

- *Civil engineering technologists and technicians*, $31.11
- *Electrical and electronic engineering technologists and technicians*, $28.56
- *Mechanical engineering technologists and technicians*, $28.31
- *Industrial engineering technologists and technicians,* $27.07

Experienced workers can expect to earn wages between $40.20 and $50.31.

**Exhibit 3: Earnings for occupations in Los Angeles County**

| Occupation | Entry-Level Hourly Earnings (25th Percentile) | Median Hourly Earnings | Experienced Hourly Earnings (75th Percentile) | Median Annual Earnings* |
|---|---|---|---|---|
| Civil Engineering Technologists and Technicians | $31.11 | $40.16 | $50.31 | $83,500 |
| Electrical and Electronic Engineering Technologists and Technicians | $28.56 | $37.04 | $46.12 | $77,000 |
| Industrial Engineering Technologists and Technicians | $27.07 | $32.84 | $44.57 | $68,300 |
| Mechanical Engineering Technologists and Technicians | $28.31 | $34.58 | $40.20 | $71,900 |

*Rounded to the nearest $100

## Orange County

All four middle-skill engineering occupations have entry-level wages above the self-sufficiency standard wage for one adult ($27.13 in Orange County). Typical entry-level hourly wages are in a range between $28.79 and $30.68 (Exhibit 4). All occupations have entry-level wages above the self-sufficiency standard wage:

- *Civil engineering technologists and technicians*, $30.68
- *Electrical and electronic engineering technologists and technicians,* $30.23
- *Mechanical engineering technologists and technicians,* $29.13
- *Industrial engineering technologists and technicians,* $28.79

Experienced workers can expect to earn wages between $40.87 and $49.42.

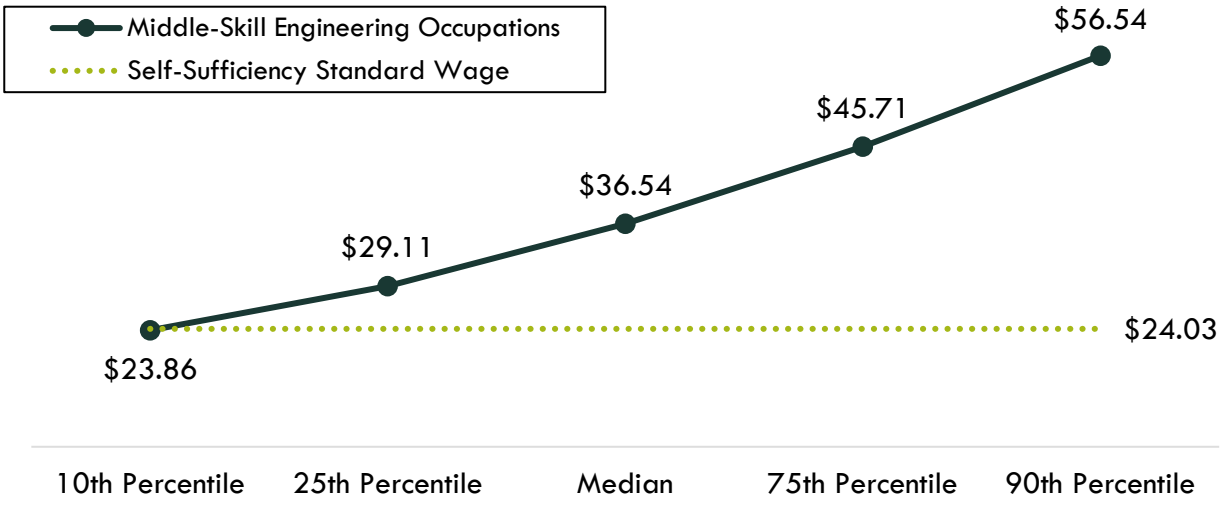
**Exhibit 4: Earnings for occupations in Orange County**

| Occupation | Entry-Level Hourly Earnings (25th Percentile) | Median Hourly Earnings | Experienced Hourly Earnings (75th Percentile) | Median Annual Earnings* |
|---|---|---|---|---|
| Civil Engineering Technologists and Technicians | $30.68 | $39.52 | $49.42 | $82,200 |
| Electrical and Electronic Engineering Technologists and Technicians | $30.23 | $38.91 | $48.21 | $80,900 |
| Industrial Engineering Technologists and Technicians | $28.79 | $34.79 | $47.03 | $72,400 |
| Mechanical Engineering Technologists and Technicians | $29.13 | $35.31 | $40.87 | $73,400 |

*Rounded to the nearest $100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are $29.11; this is above the living wage for one single adult in Los Angeles County ($24.03). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

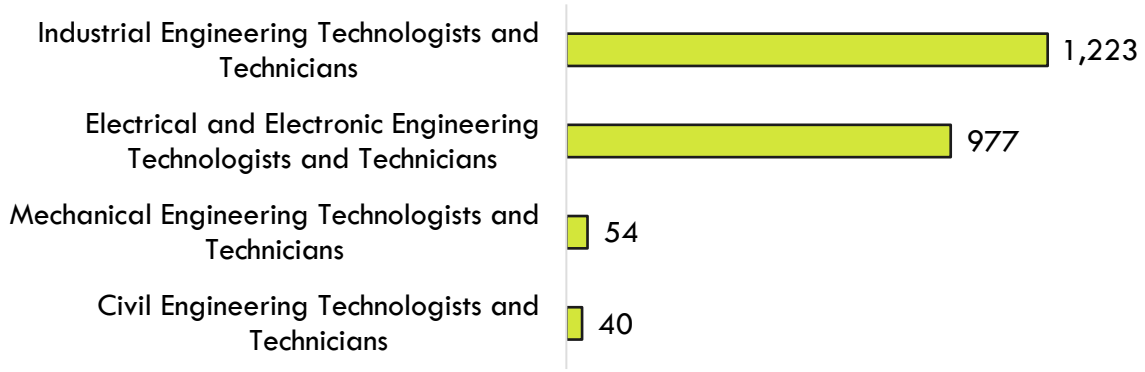
**Exhibit 5: Average hourly earnings for middle-skill engineering occupations, Los Angeles and Orange counties**




## JOB POSTINGS

There were 2,294 online job postings related to middle-skill engineering occupations listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (53%) were for *industrial engineering technologists and technicians*, followed by *electrical and electronic engineering technologists and technicians* (43%).

**Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties**




Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

**Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties**

| Top Job Titles | Top Skills | Top Employers |
|---|---|---|
| • Manufacturing technicians<br>• Production technicians<br>• Engineering technicians<br>• Instrument technicians<br>• Automation technicians<br>• Assembly line operators<br>• PLC Technicians | • Machinery<br>• Hand tools<br>• Test equipment<br>• Good manufacturing practices<br>• Automation<br>• Electronics<br>• Programmable logic controllers | • Aerotek*<br>• Actalent*<br>• Volt*<br>• Bausch Health<br>• ManpowerGroup*<br>• Grifols<br>• B. Braun Group<br>• Express Employment Professionals* |

*Staffing company

In the greater Los Angeles/Orange County region, 63% of the middle-skill engineering occupations job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

**Exhibit 8: Education levels requested in job postings for middle-skill engineering occupations, Los Angeles and Orange counties**

| Education Level | Job Postings | % of Job Postings |
|---|---|---|
| Bachelor's degree | 111 | 8% |
| Associate degree | 250 | 17% |
| High school diploma or vocational training | 1,086 | 75% |

## EDUCATIONAL ATTAINMENT

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for all occupations in this report (Exhibit 9). Furthermore, the national-level data indicates between 50% and 61% of workers in the field have completed some college or an associate degree as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

**Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics**

| Occupation | Education Level |
|---|---|
| Civil Engineering Technologists and Technicians | Associate degree |
| Electrical and Electronic Engineering Technologists and Technicians | Associate degree |
| Industrial Engineering Technologists and Technicians | Associate degree |
| Mechanical Engineering Technologists and Technicians | Associate degree |

# EDUCATIONAL SUPPLY

## Community College Supply

Exhibits 10 and 11 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Mt San Antonio, Pasadena, and East LA. While there have been bachelor's degrees awarded in the region in engineering technology, there are no other postsecondary institutions in the greater LA/OC region that have conferred sub-baccalaureate awards for middle-skill engineering occupations in the past three years.

**Exhibit 10: Regional community college awards (certificates and degrees), 2022-2024**

| TOP Code | Program | College | 2021-22 Awards | 2022-23 Awards | 2023-24 Awards | 3-Year Average |
|---|---|---|---|---|---|---|
| 0201.00 | Architecture and Architectural Technology | Cerritos | 15 | 48 | 45 | 36 |
| | | Citrus | 7 | 5 | 6 | 6 |
| | | East LA | 23 | 66 | 85 | 58 |
| | | El Camino | 15 | 13 | 9 | 12 |
| | | Glendale | 17 | 19 | 30 | 22 |
| | | LA Harbor | 13 | 7 | 2 | 7 |
| | | LA Pierce | 11 | 8 | 7 | 9 |
| | | LA Trade-Tech | 13 | 12 | 15 | 13 |
| | | LA Valley | 3 | 2 | 2 | 2 |
| | | Long Beach | 9 | 9 | 6 | 8 |
| | | Mt San Antonio | 95 | 76 | 125 | 99 |
| | | Pasadena | 12 | 9 | 17 | 13 |
| | | Rio Hondo | 8 | 9 | 32 | 16 |
| | | Santa Monica | - | 4 | 22 | 9 |
| | | **LA Subtotal** | **241** | **287** | **403** | **310** |
| | | Fullerton | - | 7 | 5 | 4 |
| | | Orange Coast | 75 | 57 | 65 | 66 |

| TOP Code | Program | College | 2021-22 Awards | 2022-23 Awards | 2023-24 Awards | 3-Year Average |
|---|---|---|---|---|---|---|
| | | Saddleback | 4 | 4 | 14 | 7 |
| | | **OC Subtotal** | **79** | **68** | **84** | **77** |
| | **Supply Subtotal/Average** | | **320** | **355** | **487** | **387** |
| 0924.00 | Engineering Technology, General | Cerritos | 15 | 9 | 13 | 12 |
| | | East LA | - | - | 3 | 1 |
| | | Glendale | 3 | 2 | - | 2 |
| | | Long Beach | - | - | 1 | 0 |
| | | Mt San Antonio | 6 | 25 | 50 | 27 |
| | | Pasadena | 211 | 198 | 319 | 243 |
| | | **LA Subtotal** | **235** | **234** | **386** | **285** |
| | | Fullerton | - | - | 1 | 0 |
| | | **OC Subtotal** | **-** | **-** | **1** | **0** |
| | **Supply Subtotal/Average** | | **235** | **234** | **387** | **285** |
| 0934.00 | Electronics and Electric Technology | East LA | 4 | 98 | 117 | 73 |
| | | El Camino | 2 | 7 | 8 | 6 |
| | | Glendale | 2 | 7 | 5 | 5 |
| | | LA City | - | 1 | - | 0 |
| | | LA Pierce | 14 | 13 | 6 | 11 |
| | | LA Southwest | 4 | 6 | 5 | 5 |
| | | LA Valley | 34 | 24 | 18 | 25 |
| | | Long Beach | 79 | 69 | 113 | 87 |
| | | Mt San Antonio | 152 | 138 | 121 | 137 |
| | | Pasadena | 27 | 5 | 8 | 13 |
| | | Rio Hondo | 2 | 2 | 6 | 3 |
| | | **LA Subtotal** | **320** | **370** | **407** | **366** |
| | | Coastline | 44 | 23 | 13 | 27 |
| | | Irvine | 16 | 12 | 15 | 14 |
| | | Orange Coast | 6 | - | - | 2 |
| | | Saddleback | 19 | 21 | 16 | 19 |
| | | **OC Subtotal** | **85** | **56** | **44** | **62** |
| | **Supply Subtotal/Average** | | **405** | **426** | **451** | **427** |
| 0956.00 | Manufacturing and Industrial Technology | Cerritos | 1 | 1 | 5 | 2 |
| | | El Camino | 4 | 2 | - | 2 |
| | | Glendale | 1 | - | - | 0 |
| | | LA Trade-Tech | 15 | 3 | 5 | 8 |

| TOP Code | Program | College | 2021-22 Awards | 2022-23 Awards | 2023-24 Awards | 3-Year Average |
|---|---|---|---|---|---|---|
| | | LA Valley | - | 2 | 5 | 2 |
| | | Mt San Antonio | 13 | 26 | 28 | 22 |
| | | West LA | - | - | 2 | 1 |
| | | **LA Subtotal** | **34** | **34** | **45** | **38** |
| | | Cypress | - | - | 4 | 1 |
| | | Fullerton | 18 | 9 | 12 | 13 |
| | | Irvine | 2 | - | - | 1 |
| | | Saddleback | 8 | 4 | 3 | 5 |
| | | Santa Ana | 4 | - | - | 1 |
| | | Santiago Canyon | 7 | 6 | 2 | 5 |
| | | **OC Subtotal** | **39** | **19** | **21** | **26** |
| | | **Supply Subtotal/Average** | **73** | **53** | **66** | **64** |
| | | **Supply Total/Average** | **1,033** | **1,068** | **1,391** | **1,164** |

Exhibit 11 displays the community college awards issued broken down by award type. In this case, the majority of awards issued are degrees (46%) and certificates of achievement (45%).

**Exhibit 11: Regional community college awards (certificates and degrees), 2022-2024**

| Award Type | # of Awards | % of Awards |
|---|---|---|
| A.A./A.S. degrees | 535 | 46% |
| Certificates | 519 | 45% |
| Noncredit awards | 110 | 9% |
| | **1,164** | **100%** |

## APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- ***Civil Engineering Technologists and Technicians (17-3022)*** Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.[10]
- ***Electrical and Electronic Engineering Technologists and Technicians (17-3023)*** Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls,

[10] Civil Engineering Technologists and Technicians (bls.gov)

and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.[11]

- ***Industrial Engineering Technologists and Technicians (17-3026)*** Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.[12]
- ***Mechanical Engineering Technologists and Technicians (17-3027)*** Apply theory and principles of mechanical engineering to modify, develop, test, or adjust machinery and equipment under direction of engineering staff or physical scientists.[13]

**Contact information:**
Luke Meyer, Director

Los Angeles Center of Excellence

Lmeyer7@mtsac.edu

***If for any reason this document is not accessible or if you have specific needs for readability, please contact us and we will do our utmost to accommodate you with a modified version.***

CENTER OF EXCELLENCE
FOR LABOR MARKET RESEARCH

POWERED BY
California Community Colleges

**DATA SOURCES**

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)



[11] Electrical and Electronic Engineering Technologists and Technicians (bls.gov)
[12] Industrial Engineering Technologists and Technicians (bls.gov)
[13] Mechanical Engineering Technologists and Technicians (bls.gov)