ADVANCED MANUFACTURING

Orange County Sector Analysis Project

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Prepared by:
Orange County Center of Excellence
for Labor Market Research

POWERED BY
California Community Colleges

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Future BUILT
Orange County Community Colleges

SECTOR OVERVIEW

This Sector Profile highlights key points from the entire Advanced Manufacturing sector in Orange County as well as from the Orange County (OC) Sector Analysis Project – a research report conducted by the OC Center of Excellence for Labor Market Research. The Advanced Manufacturing sector includes industries such as advanced electronics, aerospace, analytical instruments, biopharmaceuticals, communications equipment, and medical devices. Advanced Manufacturing is one of the largest industry sectors in Orange County. Orange County comprises 10.8% of all Advanced Manufacturing employment in California. Because Advanced Manufacturers are small, specialized firms, employers invest significant resources in training their workforce and providing personnel opportunities for job growth. In 2019, 70% of students who completed or exited an Advanced Manufacturing community college program in the Orange County region were employed within six months after exit.

Data Points

121,456
people employed in OC

-9% (10,940)
5-year projected job change

4,794
businesses in OC

10.8%
of the sector's employment in California is from OC

$82,922
average earnings per job

11.6%
of the sector's businesses in California are from OC

The Advanced Manufacturing sector accounts for 121,456 jobs in the Orange County region and 10.8% of all Advanced Manufacturing jobs in California. There are approximately 4,794 individual businesses in the region, which make up 11.6% of all the businesses for the sector in California. This sector is projected to decline by 9% (or 10,940 jobs) in the next five years in Orange County. The average earnings per Advanced Manufacturing job are $82,922.

Local Employers

- Swift Health Systems
- Aero Pacific
- Kimco MagTek
- Through6
- Vyaire Medical
- Lightworks Optical System

TOP MIDDLE-SKILL JOBS

Middle-skill jobs are occupations that community college students would be best prepared for after obtaining a certificate or degree. The top middle-skill jobs for the Advanced Manufacturing sector are included below, along with corresponding entry-level and median hourly wages.

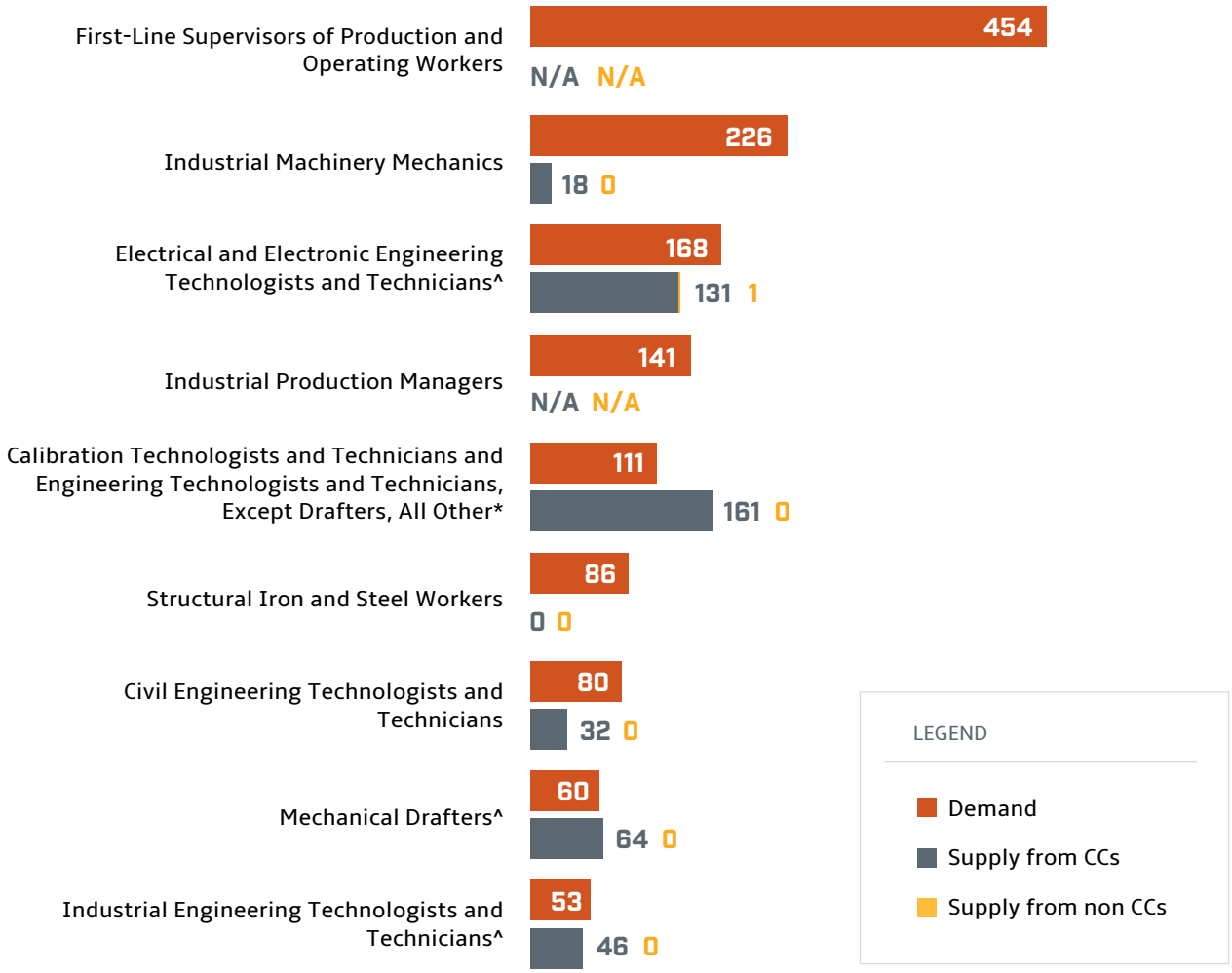
Middle-Skill Jobs Attainable with a Community College Education, Orange County (2020-2025)

SOC Code	SOC Occupational Title	Demand Annual Openings	Entry-Level Wage 25th Percentile	Median Wage
51-1011	First-Line Supervisors of Production and Operating Workers	454	$23.33	$30.69
49-9041	Industrial Machinery Mechanics	226	$21.85	$28.69
17-3023	Electrical and Electronics Engineering Technicians	168	$25.11	$31.84
11-3051	Industrial Production Managers	141	$40.48	$52.98
17-3098	Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other	111	$23.49	$29.67
47-2221	Structural Iron and Steel Workers	86	$21.27	$30.81
17-3022	Civil Engineering Technologists and Technicians	80	$27.49	$34.12
17-3013	Mechanical Drafters	60	$23.41	$29.88
17-3026	Industrial Engineering Technologists and Technicians	53	$24.19	$32.82

LABOR MARKET DEMAND, PROGRAM SUPPLY, & SUPPLY GAPS

Top middle-skill jobs are defined as occupations with the most labor market demand, stable employment growth, and entry-level wages at or above the living wage, as determined by the California Family Needs Calculator. The living wage for a single adult in Orange County is currently $20.63.[1] Comparing labor market demand with program supply suggests that the majority of the top middle-skill jobs in this sector have supply gaps in the Orange County region. Labor market demand is defined as the number of average annual job openings per year that employers expect to fill for a particular occupation. Program supply is the number of awards (e.g., degrees, certificates) from community colleges and other training providers.

Top Middle-Skill Jobs in Orange County: Labor Market Demand vs. Program Supply



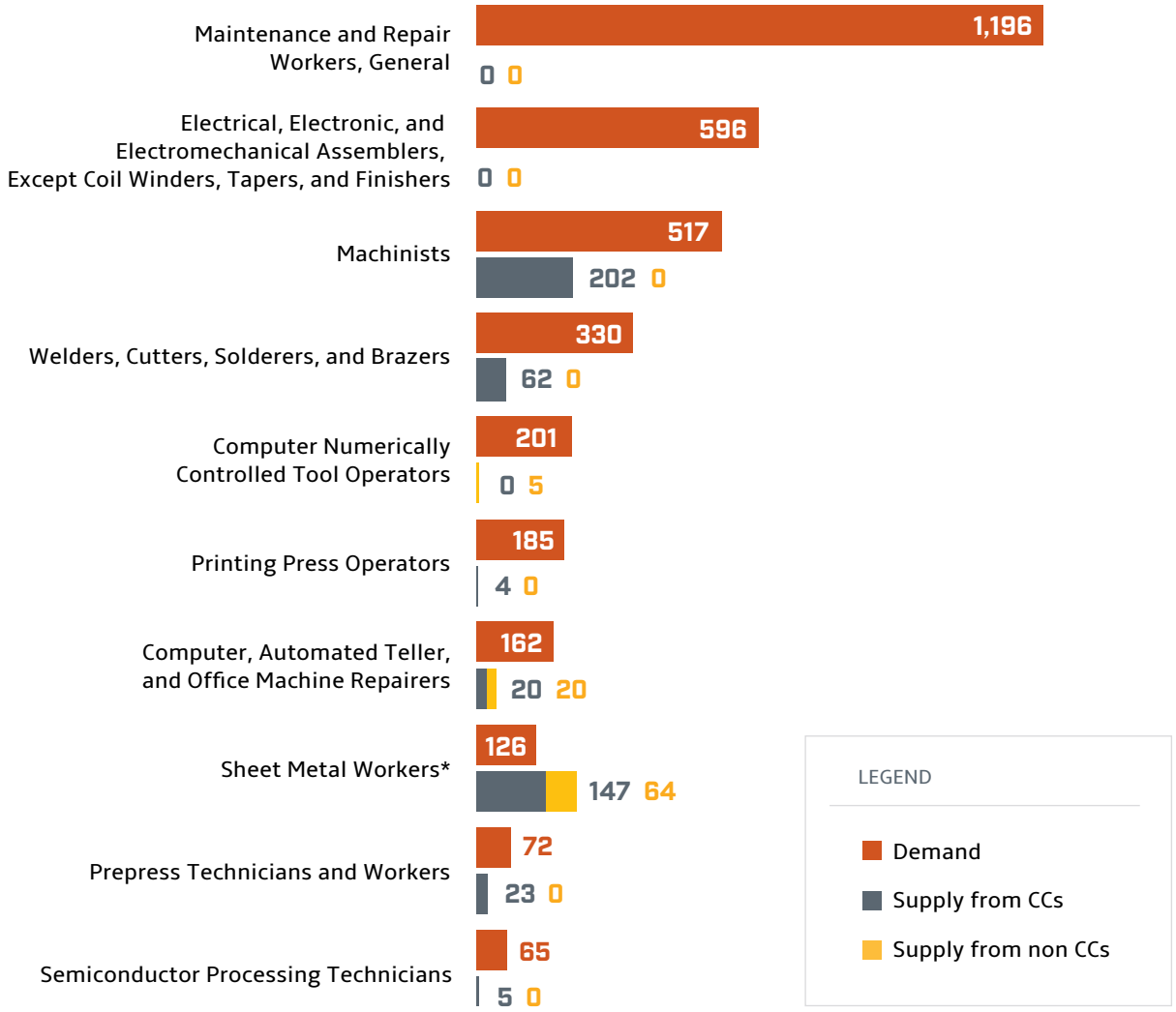
(Please note: * indicates that the occupation has an oversupply of labor, ^ indicates that the occupation's demand has been met, and N/A indicates that no community college program reported awards for this occupation or no community college program is available for this occupation.)

[1] The living wage as determined by the California Family Need Calculator is the hourly wage that a single adult needs to earn to meet basic needs in Orange County. insightcced.org/2018-family-needs-calculator/

MIDDLE-SKILL JOBS WITH ENTRY-LEVEL WAGES BELOW THE REGIONAL LIVING WAGE

While it is important to understand which top middle-skill jobs have opportunities for increased program supply, it is also important to consider middle-skill occupations that have entry-level wages below the regional living wage, currently at $20.63, but median wages near or above it. Since wages generally increase from entry-level to median earnings with additional experience and training, students could potentially earn self-sustaining wages with additional apprenticeship or work-based learning opportunities.

Middle-Skill Jobs in Orange County with Entry-Level Wages Below the Regional Living Wage



(Please note: * indicates that the occupation has an oversupply of labor, ^ indicates that the occupation's demand has been met, and N/A indicates that no community college program reported awards for this occupation or no community college program is available for this occupation.)

Entry-Level and Median Wages for Middle-Skill Jobs in Orange County
with Entry-Level Wages Below the Regional Living Wage

SOC Code	SOC Occupational Title	Demand Annual Openings	Entry-Level Wage 25th Percentile	Median Wage Above the Living Wage
49-9071	Maintenance and Repair Workers, General	1,196	$16.51	$22.05
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	596	$15.06	$17.83
51-4041	Machinists	517	$16.68	$21.55
51-4121	Welders, Cutters, Solderers, and Brazers	330	$16.15	$20.30
51-9161	Computer Numerically Controlled Tool Operators	201	$15.79	$20.14
51-5112	Printing Press Operators	185	$15.15	$18.60
49-2011	Computer, Automated Teller, and Office Machine Repairers	162	$16.43	$20.93
47-2211	Sheet Metal Workers	126	$17.59	$25.97
51-5111	Prepress Technicians and Workers	72	$15.11	$20.91
51-9141	Semiconductor Processing Technicians	65	$17.45	$19.55

KEY FINDINGS & RECOMMENDATIONS

Between July and August 2019, focus groups comprised of stakeholders from the community colleges and industry experts met to review the labor market demand and program supply for middle-skill jobs in Orange County's Priority and Emerging Sectors. The objectives of the focus groups were to identify labor market supply gaps in middle-skill jobs and provide intelligence as to how they are working to close supply gaps, as well as the challenges they encounter in their programs. The following summarizes the findings and recommendations for the Advanced Manufacturing sector.

4,829
annual job openings
(labor market demand)

1,007
average annual program awards
(labor market supply)

3,912
supply gap
(awards needed to close the gap)

Key Finding

Recommendation

1 **Retention and success rates are high for Advanced Manufacturing courses, but program completion numbers are low:** Community colleges in Orange County are undersupplying for middle-skill Advanced Manufacturing jobs. Approximately 9% of all students enrolled in Advanced Manufacturing programs completed a degree or certificate in the 2019-2020 academic year. Students often take one or two courses to gain additional skills, then exit the community college system or they find a job before completing their program. These explanations suggest that some programs may be overdesigned, meaning that they require more courses than necessary for students to gain the needed skills to obtain employment.

To increase completion rates of students in Advanced Manufacturing programs, colleges could re-work overdesigned programs or consider moving these programs to enhanced noncredit. Noncredit certificates are included in the Strong Workforce Program (SWP) metrics, Student Success metrics, and the Vision for Success. Enhanced noncredit programs could be a way to satisfy student needs for short-term programs and still benefit colleges. Additionally, college faculty, deans, and the Regional Employer Engagement Team should review program and course data to determine the specific barriers that prevent students from successfully completing a program (e.g., challenging introductory courses and differing prerequisites across colleges for higher level courses). Strong Workforce Program (SWP) funds could be invested at the college level to address students' specific barriers to course/program retention and completion.

2 **Advanced Manufacturing skills and certifications are transferable and not necessarily exclusive to a particular occupation:** Orange County community colleges are developing new programs around robotics, conversational programming, and maintenance that are not solely specific to the Advanced Manufacturing Sector and provide valuable skills that can be used in other sectors such as Energy, Construction, and Utilities.

Employers tend to hire students before they complete their programs, as long as students have foundational skills needed for the job. Industry-recognized certifications are another way to demonstrate skill attainment. Colleges could explore offering courses that will allow students to obtain certifications such as Siemens Programmable Logic Controller (PLC), Level One Mechatronics, and SOLIDWORKS, all of which can be applied in both the Advanced Manufacturing and Energy, Construction, and Utilities sectors.

Key Finding

Recommendation

3 **Advanced Manufacturing programs across Orange County community colleges are fragmented:** Orange County community colleges offer several Advanced Manufacturing courses and programs—many of which have similar training goals or learning outcomes. However, each college has a different approach and curriculum, which can be confusing for students to navigate, should they desire to complete their education across multiple institutions. This fragmentation may cause students to take longer to actually complete programs, especially if courses do not articulate from one institution to another.

To address the fragmentation of Advanced Manufacturing programs, the Regional Employer Engagement Team could convene administrators, faculty, and counselors to discuss articulation agreements for courses and programs that have similar goals or learning outcomes. This could create a more seamless pipeline for students thereby increasing their opportunity for completing an Advanced Manufacturing program.

4 **Knowledge, Skills, and Abilities (KSAs) for the sector have not been validated by employers:** The OC Sector Analysis Project brief examines job gaps but does not explore the specific KSAs taught at the colleges and compare them to the labor market's demand for Advanced Manufacturing KSAs.

To determine if the region's community colleges are training for the right KSAs, the Regional Employer Engagement Team should convene employers in a "regional advisory group" where employers can review program KSAs, provide feedback, and validate the KSAs' current relevance and demand in the labor market.

MORE ABOUT THE CENTERS OF EXCELLENCE

The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California Community Colleges for program decision-making and resource-development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Education (CE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

The Centers of Excellence Initiative is funded in part by the Chancellor's Office, California Community Colleges, Economic and Workforce Development Program. The Orange County COE is fully funded by the Orange County Regional Strong Workforce Program allocation. The Centers aspire to be the leading source of regional workforce information and insight for California Community Colleges. More information about the Centers of Excellence is available at coeccc.net.

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For the full report, visit Orange County at coeccc.net.

Sources

Demand data is pulled from Emsi, a software program that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS), and other government agencies.

Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Important Disclaimer

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports such as those from the Orange County Center of Excellence for Labor Market Research and Cal-PASS Plus LaunchBoard. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host college/district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

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