Aeronautical and Aviation Technology

Inland Empire/Desert Region (Riverside and San Bernardino counties)

This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary

- Community college aeronautical and aviation technology programs provide the knowledge, skills, and abilities that prepare students for employment in four community college-level occupations.
- These occupations are projected to have 211 annual job openings through 2025, increasing employment by 3%.
- The median hourly earnings for these occupations are between $18.65 and $38.97 per hour. The median hourly earnings for three of the four occupations are above the regional $24.36 per hour self-sustainable wage standard for a single adult with one child.
- Regional community colleges have issued an annual average of 253 awards in aeronautical and aviation technology programs over the last three academic years. Other postsecondary education providers have issued 51 awards annually in programs related to aviation maintenance over the last three academic years.
- The COE recommends expanding existing aviation programs to meet the region demand for more workers. See the recommendation section for further detail.

Introduction

This report provides data on programs and occupations related to aviation maintenance technicians. The California Community College programs related to aviation maintenance technicians are:

- Aeronautical and Aviation Technology (TOP 0950.00)
- Aviation Airframe Mechanics (TOP 0950.10)
- Aviation Powerplant Mechanics (TOP 0950.20)

The **aeronautical and aviation technology** program prepares students for employment through the instruction of the theory of flight and the design, construction, operation, and maintenance of aircraft, aircraft propulsion units, and aerospace vehicles. These programs include combined airframe and powerplant mechanics programs (Taxonomy of Programs, 2012).

The **aviation airframe mechanics** program prepares students for employment by providing instruction of inspection, repair, service, maintenance, and overhaul of airframes and aircraft systems. These programs are

designed to meet the Federal Aviation Administration (FAA) requirements for licensing as an airframe mechanic (Taxonomy of Programs, 2012).

The **aviation powerplant mechanics** program prepares students for employment through instruction related to the inspection, repair, service, maintenance, and overhaul of aircraft engines and engine systems. The program is designed to meet the Federal Aviation Administration (FAA) requirements for licensing as a powerplant mechanic (Taxonomy of Programs, 2012).

The knowledge, skills, and abilities trained by aeronautical and aviation technology programs lead to four distinct occupations, collectively referred to as the aviation maintenance occupational group in this report. Definitions, alternative job titles, education, and training requirements for the occupations in this group are available in the appendix.

- Aerospace Engineering and Operations Technicians (SOC 17-3021)
- Aircraft Mechanics and Service Technicians (49-3011)
- Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (51-2011)
- Avionics Technicians (49-2091)

Job Counts and Projections

In 2020, there were 2,442 aviation maintenance jobs in the Inland Empire/Desert Region. Employment for the aviation maintenance occupational group is projected to increase by 3% through 2025, with 211 job openings available annually. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers age 55 years and greater in the region.

Exhibit 1: Five-year projections for the aviation maintenance occupational group, 2020-2025

Occupation	2020 Jobs	2025 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Aircraft Mechanics and Service Technicians	1,661	1,740	5%	732	146	14%
Avionics Technicians	336	343	2%	126	25	6%
Aerospace Engineering and Operations Technologists and Technicians	300	309	3%	135	27	30%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	144	135	(6%)	59	12	23%
Total	**2,442**	**2,527**	**3%**	**1,053**	**211**	**15%**

Source: Emsi 2021.3

Exhibit 2 shows the number of job ads posted during the last 12 months and the regional and statewide average time filling each occupation. The job advertisement search for aircraft structure, surfaces, rigging, and systems assemblers, avionics technicians, and aerospace engineering and operations technologists and technicians was expanded to all of California to ensure reliable and generalizable results. Approximately 8% of the 1,582 statewide job advertisements were posted in the region, 134 ads.

On average, regional employers fill online job advertisements for aircraft mechanics and service technicians in 37 days, two days longer than the statewide average time to fill for this occupation. Time to fill information indicates that regional employers may face similar challenges filling open positions as other employers in California.

Exhibit 2: Job ads and time to fill

Occupation	Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
Aircraft Mechanics and Service Technicians	103	37	35
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers*	293	-	24
Avionics Technicians*	249	-	35
Aerospace Engineering and Operations Technologists and Technicians*	47	-	39
Total	**692**	**37**	**33**

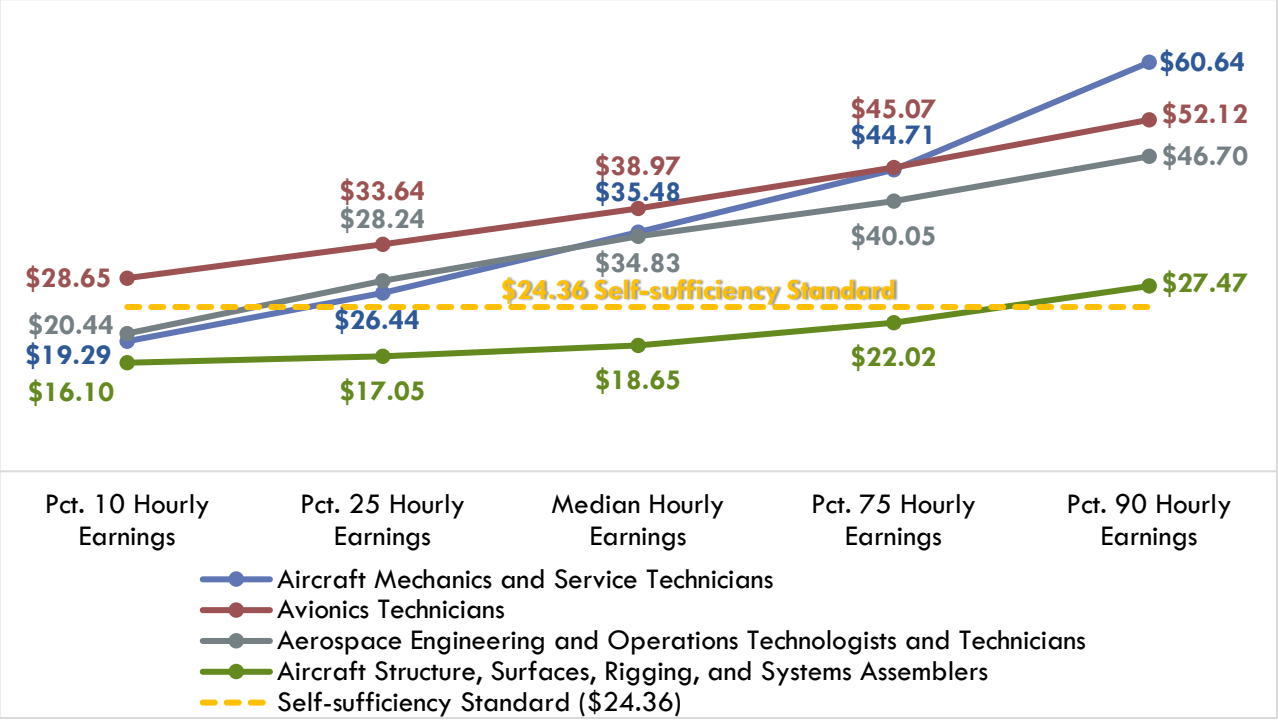
Source: Burning Glass – Labor Insights
*California job advertisement information

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide self-sustainable income. The University of Washington estimates that a self-sufficient hourly rate for a single adult with one school-age child is $24.36 per hour or $51,452 annually in Riverside County; $23.73 per hour or $50,119 annually in San Bernardino County (Pearce, 2021). For this study, the higher hourly earnings requirement in Riverside County is adopted as the self-sufficiency standard for the two-county region.

Exhibit 3 displays the hourly earnings for the aviation maintenance occupational group. The median hourly earnings for these occupations are between $18.65 and $38.97 per hour. The 25th percentile hourly earnings for aircraft mechanics and service technicians, avionics technicians, and aerospace engineering and operations technologists and technicians surpass the regional self-sufficiency standard, indicating that at least 75% of workers in the field earn a self-sustainable wage. The hourly earnings for aircraft structure, surfaces, rigging, and systems assemblers do not surpass the self-sufficiency standard until the 90th percentile.

Exhibit 3: Hourly earnings by percentile for the aviation maintenance occupational group



Source: Emsi 2021.3

Benefits information, typically provided by the California Labor Market Information Division's occupational guides, is not available for the aviation maintenance occupational group (Detailed Occupational Guides, 2021).

Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for the aviation maintenance occupational group over the last 12 months. Online job ad salary information reveals that employers are willing to pay the aviation maintenance occupational group between $40,000 and $59,000 annually. Except for aircraft structure, surfaces, rigging, and systems assemblers, the advertised annual salaries for the aviation maintenance occupational group are above the region's $51,452 annual ($24.36 hourly) self-sufficiency standard. Consider the salary information with caution since only 28% (196 out of 692) of online job ads for these occupations provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 4: Advertised salary information

Occupations	Real-Time Salary Information					
	Number of job ads	Less than $35,000	$35,000 to $49,999	$50,000 to $74,999	More than $75,000	Average Annual Salary
Aircraft Mechanics and Service Technicians	29	-	24%	69%	7%	$59,000

Occupations	Real-Time Salary Information					
	Number of job ads	Less than $35,000	$35,000 to $49,999	$50,000 to $74,999	More than $75,000	Average Annual Salary
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers*	*92*	25%	63%	11%	1%	$40,000
Avionics Technicians*	*59*	3%	27%	*57%*	12%	$58,000
Aerospace Engineering and Operations Technologists and Technicians*	*16*	12%	31%	38%	19%	$59,000

Source: Burning Glass – Labor Insights
*California job advertisement information

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers that posted the most job ads during the last 12 months. Displaying employer names provides insight into where students may find employment after completing a program. Amentum, an aviation maintenance service provider, posted the most job advertisements for the aviation maintenance occupational group in the region.

Exhibit 5: Employers posting the most job ads for the aviation maintenance occupational group

Occupation	Top Employers	
Aircraft Mechanics and Service Technicians *(n=103)*	• Amentum • DynCorp International • L3Harris	• General Atomics • United Parcel Service Inc. • SkyWest Incorporated
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers* *(n=293)*	• Eaton • Parker Aerospace Group	• General Atomics • Butler Aerospace and Defense
Avionics Technicians* *(n=249)*	• General Atomics • Northrop Grumman • Teledyne Technologies • The Boeing Company	• SpaceX • Kratos Defense & Security Solutions • Duncan Aviation
Aerospace Engineering and Operations Technologists and Technicians* *(n=47)*	• SpaceX • The Boeing Company	• Regent Aerospace Corporation

Source: Burning Glass – Labor Insights
*California job advertisement information

Exhibit 6 lists a sample of specialized and employability skills employers seek when seeking workers to fill aviation maintenance occupational group positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend

industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads

Occupation	Specialized skills	Employability skills
Aircraft Mechanics and Service Technicians *(n=100)*	• Repair • Hand Tools • Test Equipment • Airframe and Powerplant	• Troubleshooting • Physical Abilities • Communication Skills • Computer Literacy
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers* *(n=265)*	• Hand Tools • Repair • Schematic Diagrams • Power Tools	• Physical Abilities • Work Area Maintenance • Computer Literacy • Communication Skills
Avionics Technicians* *(n=247)*	• Repair • Wiring • Schematic Diagrams • Soldering	• Troubleshooting • Physical Abilities • Communication Skills • Organizational Skills
Aerospace Engineering and Operations Technologists and Technicians* *(n=43)*	• Repair • Test Equipment • Soldering • Micrometers	• Troubleshooting • Communication Skills • Research • Detail-Oriented

Source: Burning Glass – Labor Insights
*California job advertisement information

Exhibit 7 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for the aviation maintenance occupational group. According to the Bureau of Labor Statistics, between 31%-64% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree" and an "associate degree." Most employers posting job advertisements for the aviation maintenance occupational group sought candidates with a high school diploma or vocational training.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Real-Time Minimum Advertised Education Requirement			
			Number of Job Ads	High school or vocational training	Associate degree	Bachelor's degree or higher
Aircraft Mechanics and Service Technicians	Postsecondary nondegree award	59%	*59*	95%	5%	-
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers**	High school diploma or equivalent	31%	*198*	98%	1%	1%

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Real-Time Minimum Advertised Education Requirement			
			Number of Job Ads	High school or vocational training	Associate degree	Bachelor's degree or higher
Avionics Technicians**	Associate degree	64%	*165*	69%	22%	9%
Aerospace Engineering and Operations Technologists and Technicians**	Associate degree	51%	*40*	90%	-	10%

Source: Emsi 2021.3, Burning Glass – Labor Insights
*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework
**California job advertisement information

Exhibit 8 displays the work experience typically required to enter each occupation and the real-time work experience requirements from employer job ads.

Exhibit 8: Work experience required and real-time work experience requirements

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of job ads	0 – 2 years	3 – 5 years	6+ years
Aircraft Mechanics and Service Technicians	None	*74*	34%	64%	12%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers*	None	*176*	62%	29%	9%
Avionics Technicians*	None	*195*	25%	56%	19%
Aerospace Engineering and Operations Technologists and Technicians*	None	*36*	75%	19%	6%

Source: Emsi 2021.3, Burning Glass – Labor Insights
*California job advertisement information

Certification requirements were mentioned in only 44% (302 ads) of the total job ads for the aviation maintenance technology occupational group. Of these 302 ads, 60 (20%) job ads sought individuals with their Airframe and Powerplant (A&P) Certification from the Federal Aviation Administration (FAA). To obtain this certification, individuals must meet the following requirements: be 18 years old or older; have 18-30 months of practical experience with power plants and/or airframe, or graduate from an FAA-Approved Aviation Maintenance Technician School; and pass a written, oral, and practical examination. Please visit the FAA website for more information regarding aircraft mechanic certifications (FAA, 2021).

Programs Completions and Student Outcomes

Exhibits 9,10, and 11 display annual average completion data for three California Community College aviation programs: Aeronautical and Aviation Technology (0950.00), Aviation Airframe Mechanics (0950.10), and Aviation Powerplant Mechanics (0950.20) programs, based on the most recent three academic years. Three regional community colleges offer aviation maintenance programs, Chaffey College, San Bernardino Valley College, and Victor Valley College. Combined, regional community colleges have issued 253 awards annually in programs related to aviation over the last three academic years. Program completion and student outcome methodologies can be found in the appendix.

Exhibit 9: 2017-20, Annual average community college awards for aeronautical and aviation technology programs in the region

TOP 0950.00 – Aeronautical and Aviation Technology	Associate Degree	Certificate requiring 60+ semester units	Certificate requiring 30 to < 60-semester units	Certificate requiring 16 to < 30-semester units	Certificate requiring 6 to < 18-semester units	Total CC Annual Average Awards, Academic Years 2017-20
Chaffey	-	13	2	-	-	14
San Bernardino	4	-	9	-	-	13
Victor Valley	6	-	-	7	49	61
Total	**10**	**13**	**11**	**7**	**49**	**89**

Source: MIS Data Mart

Exhibit 10: 2017-20, Annual average community college awards for aviation airframe mechanics programs in the region

TOP 0950.10 – Aviation Airframe Mechanics	Associate Degree	Certificate requiring 30 to < 60-semester units	Certificate requiring 18 to < 30-semester units	Certificate requiring 16 to < 30-semester units	Total CC Annual Average Awards, Academic Years 2017-20
Chaffey	7	23	-	-	30
San Bernardino	-	10	-	-	10
Victor Valley	-	-	24	9	32
Total	**7**	**34**	**24**	**9**	**73**

Source: MIS Data Mart

Exhibit 11: 2017-20, Annual average community college awards for aviation powerplant mechanics programs in the region

TOP 0950.20 – Aviation Powerplant Mechanics	Associate Degree	Certificate requiring 30 to < 60-semester units	Total CC Annual Average Awards, Academic Years 2017-20
Chaffey	7	25	32
San Bernardino	-	17	17
Victor Valley	-	42	42
Total	**7**	**85**	**92**

Source: MIS Data Mart

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibits 12, 13, and 14. Among the students exiting aeronautical and aviation technology programs in the region, 67% of students reported working in a job closely related to their field of study. The median annual earnings were $38,828, and 76% attained a living wage. The outcome methodology is available in the appendix section of this report.

Exhibit 12: 0950.00 – Aeronautical and aviation technology strong workforce program outcomes

Strong Workforce Program Metrics: 0950.00 – Aeronautical and Aviation Technology Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2019-20)	324	1,241
Completed 9+ career education units in one year (2019-20)	62%	67%
Perkins Economically disadvantaged students (2019-20)	82%	78%
Students who attained a noncredit workforce milestone in a year (2019-20)	96%	96%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	44	162
Transferred to a four-year institution (transfers)	-	17
Job closely related to the field of study (2017-18)	67%	71%
Median annual earnings (all exiters)	$38,828	$40,072
Median change in earnings (all exiters)	77%	21%
Attained a living wage (completers and skills-builders)	76%	62%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 13 displays student outcome information for regional aviation airframe mechanics programs. Among the students exiting aviation airframe mechanics programs in the region, 82% of students reported working in

a job closely related to their field of study. The median annual earnings were $30,408, and 64% attained a living wage.

Exhibit 13: 0950.10 – Aviation airframe mechanics strong workforce program outcomes

Strong Workforce Program Metrics: 0950.10 – Aviation Airframe Mechanics Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2019-20)	220	750
Completed 9+ career education units in one year (2019-20)	91%	85%
Perkins Economically disadvantaged students (2019-20)	89%	83%
Students who attained a noncredit workforce milestone in a year (2019-20)	98%	98%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	63	251
Transferred to a four-year institution (transfers)	-	12
Job closely related to the field of study (2017-18)	82%	83%
Median annual earnings (all exiters)	$30,408	$38,588
Median change in earnings (all exiters)	41%	22%
Attained a living wage (completers and skills-builders)	64%	57%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 14 displays student outcome information for regional aviation powerplant mechanics programs. Among the students exiting aviation powerplant mechanics programs in the region, 88% of students reported working in a job closely related to their field of study. The median annual earnings were $29,372, and 61% attained a living wage.

Exhibit 14: 0950.20 – Aviation powerplant mechanics strong workforce program outcomes

Strong Workforce Program Metrics: 0950.20 – Aviation Powerplant Mechanics Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2019-20)	181	791
Completed 9+ career education units in one year (2019-20)	94%	86%
Perkins Economically disadvantaged students (2019-20)	86%	82%
Students who attained a noncredit workforce milestone in a year (2019-20)	98%	98%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	72	239
Job closely related to the field of study (2017-18)	88%	85%

Strong Workforce Program Metrics: 0950.20 – Aviation Powerplant Mechanics Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Median annual earnings (all exiters)	$29,372	$38,908
Median change in earnings (all exiters)	41%	17%
Attained a living wage (completers and skills-builders)	61%	57%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 15 displays awards that other postsecondary education providers reported in airframe mechanics and aircraft maintenance technology/technician (CIP 47.0607) programs. Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years available. On average, one other postsecondary education institution in the region issued 51 awards annually over the last three academic years.

Exhibit 15: Other educational provider airframe mechanics and aircraft maintenance technology/technician programs, three-year annual average credentials in the region

47.0607 – Airframe Mechanics and Aircraft Maintenance Technology/Technician	Award 2 < 4 academic years	Other Educational Providers Annual Average Credentials, Academic Years 2016-19
Spartan College of Aeronautics and Technology	51	51
Total	**51**	**51**

Source: IPEDS

Recommendation

Community college aviation technology programs provide the knowledge, skills, and abilities that prepare students for employment in four community college-level occupations. These aviation maintenance occupations are expected to have 211 combined annual job openings through 2025, increasing employment by 3% over this period. Aircraft mechanics and service technicians will have the most annual job openings, 146 annual job openings.

The median hourly earnings for aviation maintenance occupations are between $18.65 and $34.30 per hour. The 25th percentile hourly earnings for aircraft mechanics and service technicians, avionics technicians, and aerospace engineering and operations technologists and technicians surpass the regional $24.36 per hour self-sustainable wage standard for a single adult with one child. The hourly earnings for aircraft structure, surfaces, rigging, and systems assemblers do not surpass the self-sufficiency standard until the 90th percentile.

The combined Aeronautical and Aviation Technology (TOP 0950.00), Aviation Airframe Mechanics (0950.10), and Aviation Powerplant Mechanics (0950.20) programs, offered at three regional colleges, conferred 253

awards over the last three academic years. Between 67% and 88% of program completers work in a job closely related to the field of study. Between 61% and 76% of regional aviation maintenance technician program completers and skills builders students attained a living wage.

The COE recommends expanding existing aviation programs to meet the regional demand for more workers. College programs should focus on training aircraft mechanics and service technicians, avionics technicians, and aerospace engineering and operations technologists and technicians due to the relatively high number of annual job openings and the strong self-sustainable earnings associated with these occupations. Colleges with aviation programs should meet with relevant employers to understand their demand for more workers and the specific skills, licensing, and credentials needed for gainful employment in this field.

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Appendix: Occupation definitions, sample job titles, five-year projections, and earnings for aviation maintenance occupations

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

Aerospace Engineering and Operations Technologists and Technicians (17-3021)

Operate, install, adjust, and maintain integrated computer/communications systems, consoles, simulators, and other data acquisition, test, and measurement instruments and equipment, which are used to launch, track, position, and evaluate air and space vehicles. May record and interpret test data.

Sample job titles: Avionics Installation Technician, Avionics Technician, Avionics Test Technician, Engineering Technician, Engineering Test Technician, Flight Test Instrument Technician, Instrumentation Technician, Systems Test Technician, Test Technician

Entry-Level Educational Requirement: Associate degree
Training Requirement: None
Work Experience: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 51%

Avionics Technicians (49-2091)

Install, inspect, test, adjust, or repair avionics equipment, such as radar, radio, navigation, and missile control systems in aircraft or space vehicles.

Sample job titles: Aircraft Electrical Systems Specialist, Aircraft Technician, Aviation Electrical Technician, Aviation Electronics Technician, Avionics Electronics Technician, Avionics Installer, Avionics Systems Integration Specialist, Avionics Technician, Electronic Technician

Entry-Level Educational Requirement: Associate degree
Training Requirement: None
Work Experience: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 64%

Aircraft Mechanics and Service Technicians (49-3011)

Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems.

Sample job titles: Aircraft Maintenance Technician (Aircraft Maintenance Tech), Aircraft Mechanic, Aircraft Restorer, Aircraft Technician, Airframe and Powerplant Mechanic (A and P Mechanic), Aviation Maintenance Technician (AMT), Aviation Mechanic, Helicopter Mechanic

Entry-Level Educational Requirement: Postsecondary nondegree award
Training Requirement: None
Work Experience: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 59%

Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (51-2011)

Assemble, fit, fasten, and install parts of airplanes, space vehicles, or missiles, such as tails, wings, fuselage, bulkheads, stabilizers, landing gear, rigging and control equipment, or heating and ventilating systems.

Sample job titles: A&P Technician (Airframe and Powerplant Technician), Aircraft Line Assembler, Assembler, Assembly Riveter, Helicopter Technician, Sheet Metal Assembler and Riveter (SMAR), Sheet Metal Mechanic, Structures Mechanic, Structures Technician

Entry-Level Educational Requirement: High school diploma or equivalent
Training Requirement: Between one and twelve months on-the-job training
Work Experience: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 31%

Appendix: Methodology

Exhibits 9, 10, and 11 display the average annual California Community College (CCC) awards conferred during the three academic years between 2017 and 2020 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

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 from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database records. 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 in each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2021a). 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, 2021a).

Job postings data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job postings may not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job posting or if they are collecting resumes for future hiring needs. A closed job posting may not be the result of a hired worker.

Table 1. 2020 to 2025 job growth, wages, entry-level education, training, and work experience required for the aviation maintenance occupational group

Occupation (SOC)	2020 Jobs	5-Year Change (New Jobs)	5-Year % Change (New Jobs)	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10th to 90th percentile)	Median Hourly Wage (50th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Aircraft Mechanics and Service Technicians (49-3011)	1,661	79	5%	146	$19.29 to $60.64	$35.48	$77,100	Postsecondary nondegree award & None	None
Avionics Technicians (49-2091)	336	7	2%	25	$28.65 to $52.12	$38.97	$81,600	Associate degree & None	None
Aerospace Engineering and Operations Technologists and Technicians (17-3021)	300	9	3%	27	$20.44 to $46.70	$34.83	$70,800	Associate degree & None	None
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (51-2011)	144	(9)	(6%)	12	$16.10 to $27.47	$18.65	$41,900	High school diploma or equivalent & 1-12 months	None
Total	**2,442**	**85**	**3%**	**211**	**-**	**-**	**-**	**-**	**-**

Source: Emsi 2021.3