Montgomery County Aerospace and Aviation Pathway

MCESC Montgomery County Educational Service Center — Business Advisory Council

Regional pathway models support the alignment of stakeholders, including employers, higher education, K–12, and workforce, to ensure pathways prepare young people for careers with family-supporting wages and build a robust talent pipeline for employers. Pathway models demonstrate a vision from eighth grade to career, including high school coursework, college and career preparation activities, potential postsecondary programs, and in-demand jobs in the regional labor market. This regional pathway model is a living document that will need to be updated regularly to reflect current education programs and workforce needs.

Academic Coursework

This general coursework is recommended for all students in the aerospace and aviation pathway.

	Middle School/ Grade 8	Grades 9 and 10	Grades 11	Grade 12
Career Focused Courses		Foundational Aerospace and Aviation or CCP Course such as: ⊕ MET 1131–Personal Computer Applications for Engineering Technology ⊕ AVT 1105–Orientation to Aviation	Strategic Aerospace and Aviation or CCP Course such as: ⊕ AVT 1101–Introduction to Unmanned Aerial Systems ⊕ AVT2125–Developments in Aviation I	Strategic Aerospace and Aviation or CCP Course such as: ⊕ ECO 2160–Principles of Macroeconomics ⊕ MAN 1107–Foundations of Business
English	Grade 8 English	English I English II ⊕ ENG 1101–English Composition	English III	English IV ⊕ COM 2211–Effective Public Speaking
	College-level English courses can be taken at any grade level in a student's high school career.			
Math	Grade 8 Math or Algebra 1	Algebra I Geometry	Algebra II ⊕ MAT 1470–College Algebra	⊕ MAT 1470–College Algebra ⊕ MAT 1570–Analytic Geometry and Trigonometry
History	Social Studies	World History	U.S. History	U.S. Government
Science	Physical Science	Biology	Chemistry	Physics ⊕ PHY 1141–College Physics I

⊕ College Credit Plus (CCP) courses apply to a broad range of postsecondary programs in aerospace/ aviation. The credits apply to both high school and postsecondary requirements, saving students time and money.

College and Career Preparation

These additional activities support students in preparing for both college and career. Work-based learning enables students to apply their academic learning in a real-world setting. Advising supports students in making decisions that align best with their strengths and future goals. Competencies describe the technical skills students need for a successful career in aerospace and aviation.

	Grade 8	Grades 9 and 10	Grade 11	Grade 12
Work-Based Learning	Career Exploration: • Career Adventures Course–Aviation • Work-site tours • Power lunches • Pathways fairs	Career Planning: • Job shadow • HR interview • Virtual pathway mentor • Resume prep	Career Planning: • Internship • Career fair • Mock interview	Career Planning: • Internship • Career fair • Mock interview
Advising	• YouScience	• Individualized college and career plan (ICCP) • Confirmation of pathway • Identification of credentials and college options • Revisit ICCP	• Financial literacy course • College application prep work • Industry recognized credential examination	• Complete Free Application for Federal Student Aid (FAFSA) • Complete Ohio Means Jobs (OMJ) Readiness Seal • College and career signing day
Competencies (defined below)	Employability skills	• Project Management and Process • Troubleshooting • Technical Writing and Editing • Fundamentals of Physics and Industry Math • Fundamentals of Systems Engineering	• Cybersecurity • Risk Management and Compliance • Quality Assurance and Control • Financial and Resource Management • Fundamentals of Computer Programming and Software Development	Individualized Specialization

Aerospace/ Aviation Technical Competencies

Project and Process Management
Students can use their ability to interpret project needs, set deadlines, and sequence activities to effectively complete a project in a timely manner.

Troubleshooting
Students can use their ability to apply a systematic approach to identifying, isolating, designing/redesigning, and testing solutions in order to implement a solution or solve a problem.

Technical Writing and Editing
Students can use their understanding of clear, grammatically correct, and concisely written communications to convey accurate messages in professional work plans, emails, and informative documents, including technical and proposal writing.

Fundamentals of Physics, Math, and Chemistry
Students can use their understanding of the basic laws of physics, chemistry, and algebraic logic to apply concepts to projects and solve relevant problems.

Fundamentals of Engineering and Systems
Students can use their understanding of relationships across complex and diverse systems in order to manage and monitor programming to obtain system optimization.

Cybersecurity
Students can use their understanding of operating systems, networks, telecommunications, ethics, and cryptography in order to maintain secure systems.

Risk Management
Students can use their understanding of the standards, applications, and regulatory requirements necessary to protect confidentiality, integrity, and availability of information.

Quality Assurance and Control
Students can use their understanding of digital design, testing, writing, and maintaining source code in order to manage and edit software across its life cycle.

Financial and Resource Management
Students can use their understanding of the principles of managing, monitoring, and controlling resources, including assets, money, and products in order to achieve project expectations.

Fundamentals of Digital Design, Computer Programming, and Software Development
Students can use their understanding of designing, writing, testing, and maintaining source code to manage and edit software.

Postsecondary Options

These selected postsecondary credentials in aerospace and aviation, based on program options and transfer agreements at Sinclair Community College, lead to careers with wages that are over $25/hour. Stackable credentials can help individuals progress in their career pathway or move up a career ladder to different or higher-paying jobs. In aerospace and aviation, there are a wide variety of subfields, including engineering, manufacturing, computer science, etc. The diversity of subfields is represented in the variety of postsecondary programs included. One common pathway to the aerospace and aviation industry not included below is through the military, but the pathways vary—some students enlist immediately after completing high school and some complete a relevant bachelor's degree before beginning their service.

	⊕ Potential Initial Credential	Stackable Credentials		Typical Occupational Outcome
Maintenance	Short-Term Certificates: • General Aviation Maintenance • Powerplant Aviation Maintenance • Airframe Aviation Maintenance	• Aviation Airframe and Powerplant Maintenance Technology Associate of Applied Science	• Aviation Maintenance Bachelor of Science	• Aviation Maintenance Technician • Aircraft Mechanic
Operations/Pilot	• Aircraft Dispatcher Short-Term Certificate	• Aviation Technology/ Professional Pilot Associate of Applied Science	• Aviation Technology/ Professional Pilot Bachelor of Applied Science	• Airline Pilot • Professional Pilot
Unmanned Aerial Systems	• Unmanned Aerial Systems Short-Term Certificate	• Unmanned Aerial Systems Associate of Science	• Unmanned Aerial Systems Bachelor of Science	• Systems Operator • Drone Pilot
Business Operations	• Business Information Certificate	• Business Administration Associate of Science	• Business Bachelor of Science	• Buyers and Purchasing Agents
Guided Transfer-Engineering	• Engineering and Engineering Technology University Transfer Associate of Science	• Engineering Science • Engineering Technology Bachelor of Science	• Engineering Master of Science	• Engineer

Selected Occupations, Wages, and Job Growth

The table below includes labor market information about selected aerospace and aviation careers, including median wages and typical education required. The living wage is derived from the MIT Living Wage Calculator and is intended to be sufficient wage to support one adult and one child living in the Dayton metropolitan statistical area. Note that while all of these jobs are expected to have openings in the next 5–10 years, we were not able to include data about specific predicted growth because so many of these jobs are in the military and that data is separate from civilian jobs.

Typical Job	Pays Living Wage ($34.16)	Median Hourly Earnings	Typical Education Level	What % of workers are age 55+?
Logisticians	Yes	$43.24	Bachelor's degree	21%
Aircraft Mechanics and Service Technicians	No	$28.83	Postsecondary nondegree award	13%
Industrial Engineers	Yes	$38.33	Bachelor's degree	31%
Flight Attendants	Yes	$34.47	High school diploma	Insufficient data
Airline Pilots, Copilots, and Flight Engineers	Yes	$97.84	Bachelor's degree	Insufficient data
Aerospace Engineers	Yes	$53.80	Bachelor's degree	29%
Avionics Technicians	No	$28.07	Associate's degree	Insufficient data
First-Line Supervisors of Mechanics, Installers, and Repairers	No	$31.35	High school diploma	31%
Aerospace Engineering and Operations Technicians	No	$30.18	Associate's degree	31%
Buyers and Purchasing Agents	Yes	$38.67	Bachelor's Degree	32%
Software Developers	Yes	$47.26	Bachelor's degree	17%

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