



SEEKING TO SPARK FUTURE AVIATION WORKERS



VIRGINIA DEPARTMENT OF EDUCATION

SESSION INFORMATION

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**LAUREN-ANNE SLEDZINSKI, TRADE
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RELATED CLUSTERS SPECIALIST**

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SCHOOL RELATIONS AND
ENGAGEMENT SPECIALIST,
DYNAMIC AVIATION**

Aviation As the Hook to Key Trade Skills

Anthony Whitehead, School Relations & Engagement Specialist
, Experience Architect
, Education Relations Support

Why Aviation?

- Thrill and mystique
- Stories and folklore since Greek's Icarus
- Something **ASPIRATIONAL** & **INSPIRATIONAL** about reaching up to the heavens and the stars





Why Aviation?

- Changes our perspectives
- Gets us above life's storm clouds
- We see our differences small and our commonalities & shared interests so evident

- Aviation Industry needs & opportunities
- Aviation pathways & potential
- Aviation skills crossover
- Virginia specific items
- Resources & next steps



Aviation Industry Needs & Opportunities



Over the next 20 years, we will need:

- ~610,000 new pilots
- ~610,000 new aviation maintenance technicians
- ~900,000 flight attendants
- ~2,000,000 (2M) personnel total, worldwide

Aviation Industry Needs & Opportunities



Fort Worth-based American Airlines is dropping three small airports from its schedule and blaming a shortage of pilots.

American Airlines will stop flying to Toledo, Ohio, along with Ithaca and Islip, N.Y., on Sept. 7, making cuts to three airports serviced by regional carriers that have been hardest hit by the shortage of pilots being felt across the industry, the company said.



For Toledo, which is about 50 miles south of Detroit, American Airlines is the only commercial carrier that provides service to the northwest Ohio airport.

“In response to the regional pilot shortage affecting the airline industry, American Airlines has made the difficult decision to end service in Islip and Ithaca, N.Y., and Toledo, Ohio, effective Sept. 7,” American Airlines spokeswoman Andrea Koos said in a statement. “We’re extremely grateful for the care and service our team members provided to our customers in Islip, Ithaca and Toledo, and are working closely with them during this time. We’ll proactively reach out to customers scheduled to travel after this date to

offer alternate arrangements.”

Carriers are facing a severe shortage of pilots due to thousands of retirements along with buyouts during the COVID-19 pandemic that reduced payrolls during lean financial times. Airlines are now ramping up schedules in response to unexpectedly robust demand from travelers.

Something new to worry about. As [United Airlines](#) [American Airlines](#) [Delta Air Lines](#) [JetBlue](#) [Alaska Airlines](#) & [Southwest Airlines](#) work around the country to lock in student [#pilots](#) at [#flightschools](#), and newly minted [#amts](#) [#aviationmaintenanceschools](#) and [#aviationuniversities](#) [#AviationColleges](#), how are small [#airlines](#) and [#businessaviation](#) supposed to compete?

That great sucking sound means a lot of [#airlines](#) and small communities will be left in the dust while large companies will ultimately get into a bigger bidding war for pilots and [#aviationmaintenancetechnicians](#) As I've said before there has never been a better time to join the [#aviationindustry](#) [#airlineindustry](#) [Aeronautical Repair Station Association](#) [National Business Aviation Association](#)



SIU, United Airlines agreement creates pathways for future pilots

thesouthern.com • 3 min read



National Aviation Academy

6,792 followers

1h • 🌐

Boeing needs A&Ps. It is predicted to need **over 600,000** aircraft technicians over the next 20 years! ... see more



Boeing Pilot and Technician Outlook 2022 Shows **Long-Term A&P Demand**

naa.edu • 2 min read

FLYING

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BUSINESS OF AVIATION

The Aviation Mechanic Shortage Is Worse Than You Might Think

Economic fallout from the pandemic has worsened an already bad situation.

By [Michael Wildes](#)

August 5, 2022



Boeing projects that the industry will have to recruit, train, and hire 610,000 new maintenance technicians by 2041. [Photo: Shutterstock]

Aviation Industry Needs & Opportunities



When I say aviation,
what companies do you think of?



Alaska
AIRLINES


ENDEAVOR AIR

UNITED 

 REPUBLIC
AIRLINE

SkyWest
AIRLINES

American
Airlines




PIEDMONT

PSASM
AIRLINES

Southwest 


DELTA

Breeze 


HAWAIIAN
AIRLINES

FRONTIER

Alaska
AIRLINES


ENDEAVOR AIR

jetBlue

Horizon Air

UNITED 

 REPUBLIC
AIRLINE

SkyWest
AIRLINES

American
Airlines




PIEDMONT

PSASM
AIRLINES

Southwest 

MESA
AIRLINES


DELTA

Breeze 



HAWAIIAN
AIRLINES

FRONTIER

envoy



Silver
AIRWAYS

spirit

Alaska
AIRLINES

CA
COMMUTAIR

Air Wisconsin


ENDEAVOR AIR

jetBlue

Horizon Air

UNITED
GoJet
AIRLINES



 **REPUBLIC**
AIRLINE

SkyWest
AIRLINES

American
Airlines




PIEDMONT

PSA
AIRLINES

Southwest 

MESA
AIRLINES


DELTA

Breeze 



HAWAIIAN
AIRLINES

FRONTIER

envoy



Silver
AIRWAYS

spirit

Alaska
AIRLINES

COMMUTAIR

Air Wisconsin

KALITTA
AIR

ENDEAVOR AIR

jetBlue

Horizon Air

UNITED



GoJet
AIRLINES



POLAR AIR CARGO

REPUBLIC
AIRLINE

ATLAS AIR
WORLDWIDE



American
Airlines



PIEDMONT

PSA
AIRLINES

SkyWest
AIRLINES

FedEx
Express

Southwest



MESA
AIRLINES

DELTA

Breeze



HAWAIIAN
AIRLINES

FRONTIER

envoy



Silver
AIRWAYS

spirit

Alaska
AIRLINES

Air Wisconsin

ENDEAVOR AIR

jetBlue

BOEING
COMMUTAIR

KALITTA
AIR



JET AVIATION
A GENERAL DYNAMICS COMPANY

UNITED



REPUBLIC
AIRLINE

Horizon Air

GoJet
AIRLINES



POLAR AIR CARGO

ATLAS AIR
WORLDWIDE



American Airlines



GE Aviation



PIEDMONT

PSA
AIRLINES

SkyWest
AIRLINES

ADVANCED
COMPOSITE STRUCTURES

FedEx
Express

Perform
International



Southwest

DAS
DALLAS AERONAUTICAL SERVICES

APA
SERVICES

DELTA

Breeze

DUNCAN
AVIATION

MESA
AIRLINES

envoy



Silver
AIRWAYS



HAWAIIAN
AIRLINES

FRONTIER
AIRLINES



U.S. AEROSPACE CORP.

"When Quality and Turn Time Matters..."



spirit

<https://www.mroglobal-online.com/>

Aviation Opportunities



When I say
aviation,
who or
what jobs
do you
think of?



Aviation Opportunities



AVIATION RELATED CAREERS



Airlines and Airport Services

TRAINING	POSITIONS
OPERATIONS SUPERVISOR	
College Degree	Industry-wide
CUSTOMER SERVICE REPRESENTATIVE	
H.S. diploma; business experience	Airlines
TICKET AGENT	
H.S. diploma; two year degree preferred	Airlines
RESERVATIONS SALES AGENT	
H.S. diploma; two year degree preferred	Airlines
FLIGHT ATTENDANT	
H.S. diploma; special training; four year degree preferred	Airlines
BAGGAGE HANDLER	
H.S. diploma	Airlines
SKY CAP	
H.S. diploma	Airlines
CARGO HANDLER	
H.S. diploma	Airlines; air freight company
AIR FREIGHT / CARGO AGENT	
H.S. diploma; shipping experience	Airlines; air freight operators
PASSENGER SERVICE AGENT	
H.S. diploma; experience helpful	Med. to large airports

Aircraft Manufacturing Occupations

TRAINING	POSITIONS
MANUFACTURING ENGINEER	
Bachelor of Science degree	Aircraft manufacturer
ELECTRICAL INSTALLERS & TECHNICIAN	
H.S. diploma; Associate's degree	Aircraft manufacturer
TOOLING & FIXTURE MAKER	

Airlines and Airport Operators

TRAINING	POSITIONS
AIRPORT MANAGER	
College degree in airport management preferred; business administration	Airports; airport authority
FIXED BASE OPERATOR MANAGER	
H.S. diploma; college degree preferred	Fixed base operators (FBOs)
LINEPERSON	
H.S. diploma	Airports; airlines; FBOs
STATION MANAGER	
College degree; exp. preferred	Airlines
SCHEDULING COORDINATOR	
College degree; exp. preferred	Airlines
FLIGHT DISPATCHER	
Dispatcher license; college degree and experience	Airlines
AIR TRAFFIC CONTROLLER	
FAA training; college preferred	FAA; Military
SAFETY INSPECTOR	
Engineering degree; and/or exp. as pilot or mechanic	FAA
CONCESSION WORKER	
H.S. diploma	Airport concessionaires
FIRE AND CRASH RESCUE	
College degree; special training	Med. to large airports
GROUND ATTENDANT	
H.S. diploma	Airlines
RAMP SERVICE PERSONNEL	
H.S. diploma	Airlines; airports; FBOs
CABIN MAINTENANCE MECHANIC	
H.S. diploma; technical training	Airlines

Pilot Careers

TRAINING	POSITIONS
REMOTE PILOT	
H.S. diploma; special training	Public & private sectors
AGRICULTURAL PILOT	
H.S. diploma; special training	Agricultural operators; large farms
AIR TRAFFIC REPORTING PILOT	
College degree preferred	Radio & TV; traffic reporting companies
MAJOR AIRLINE PILOT	
College degree; special training	National airlines
REGIONAL AIRLINE PILOT	
College degree; special training	Regional airlines
HELICOPTER PILOT	
H.S. diploma; special training	Helicopter operators; FAA; corporate flight departments
CORPORATE PILOT	
College degree preferred	FAA; companies with flight departments
FLIGHT INSTRUCTOR	
H.S. diploma; special training; experience	Flight schools
MILITARY PILOT	
College degree	U.S. Armed Forces
ASTRONAUT	
Engineers; physical science; physics; other similar adv. degree	private companies; NASA

Law-Related Services

TRAINING	POSITIONS
AVIATION ATTORNEY	
Law degree	FAA; government; private law firms; airlines
INSPECTOR	
H.S. diploma	Construction companies; airport consultants; and government
ACCIDENT INVESTIGATOR	
College degree; industry experience	NTSB; FAA; insurance companies
SECURITY SPECIALIST	
H.S. diploma; law enforcement exp.	Homeland Security; FAA airports; cargo shippers and airlines for local / state / federal or private industry

Health Services

TRAINING	POSITIONS
FLIGHT PHYSICIAN / AVIATION MEDICAL EXAMINER	

Aviation Potential



Transportation & Material Moving Occupations 2021-2031

- Projected growth 6% (avg with all occupations)
- ~ 862K new jobs
- May 2021, this group median annual wage :
\$36,860
- <median annual wage for all occupations of
\$45,760.

Aviation Potential



OCCUPATION	JOB SUMMARY	ENTRY-LEVEL EDUCATION	2021 MEDIAN PAY
 Airline and Commercial Pilots	Airline and commercial pilots fly and navigate airplanes, helicopters, and other aircraft.	See How to Become One	\$134,630
 Air Traffic Controllers	Air traffic controllers coordinate the movement of aircraft to maintain safe distances between them.	Associate's degree	\$129,750
 Railroad Workers	Railroad workers operate and maintain the activities of the switches in the rail yard.	High school diploma or equivalent	\$64,150
 Water Transportation Workers	Water transportation workers operate vessels that take passengers and cargo across waterways.	See How to Become One	\$62,760
 Flight Attendants	Flight attendants provide routine service and respond to emergencies to ensure the safety and comfort of airline passengers.	High school diploma or equivalent	\$61,640
 Heavy and Tractor-trailer Truck Drivers	Heavy and tractor-trailer truck drivers transport goods from one location to another.	Postsecondary nondegree award	\$48,310
 Material Moving Machine Operators	Material moving machine operators use equipment to transport objects.	See How to Become One	\$38,380
 Passenger Vehicle Drivers	Passenger vehicle drivers transport people from one place to place.	See How to Become One	\$37,540
 Delivery Truck Drivers and Driver/Sales Workers	Delivery truck drivers transport and drop off goods within a local region.	High school diploma or equivalent	\$36,660
 Hand Laborers and Material Movers	Hand laborers and material movers move freight, stock, or other materials.	See How to Become One	\$30,320

Avg:
\$108,673

Avg:
\$50,228

Aviation Potential



Average of aviation trades by themselves >20% more than the logistics trades listed

<u>Electrical and Electronics Installers and Repairers</u>	Electrical and electronics installers install or repair electrical and electronic equipment.	Certification or Licensure	\$62,020
<u>Electricians</u>	Electricians install, maintain, and repair electrical power, communication, and control systems.	High school diploma or equivalent & Certification or Licensure	\$56,900
<u>Mechanical Engineering Technicians</u>	Mechanical engineering technicians help mechanical engineers design, develop, test, and manufacture mechanical devices.	Associate's degree	\$58,230
<u>Aerospace Engineering and Operations Technicians</u>	Aerospace engineering technicians operate and maintain aircraft and spacecraft, and develop, test, and repair new aircraft and spacecraft.	Associate's degree	\$68,570
<u>Electro-mechanical Technicians</u>	Electro-mechanical technicians install, maintain, and repair electromechanical equipment.	Associate's degree	\$59,800
<u>Electrical and Electronics Engineering Technicians</u>	Electrical and electronics engineering technicians help engineers design and develop electrical and electronic equipment.	Associate's degree	\$67,550

Avg:
\$108,673
\$62,178

Avg:
\$50,228

Aviation Potential



Title ▲	Education	Salary
Air Traffic Controllers	High School Diploma	\$127,440.00
Aircraft Cargo Handling Supervisors	High School Diploma	\$70,690.00
Aircraft Mechanics and Service Technicians	Post-Secondary Certificate	\$69,300.00
Aircraft Service Attendants	No Data	No Data
Airfield Operations Specialists	Bachelor's Degree	\$70,870.00
Airline Pilots, Copilots, and Flight Engineers	Bachelor's Degree	\$186,870.00
Avionics Technicians	Post-Secondary Certificate	\$69,180.00
Commercial Pilots	Bachelor's Degree	\$110,830.00
Flight Attendants	High School Diploma	\$59,150.00
Passenger Attendants	High School Diploma	\$30,410.00

Virginia Aviation Potential



- **66 public use airports**
- **48 repair stations**
- **14 FAA-certified flight schools**
- **60 Fixed Base Operators (FBOs)** — contracted service provider which supplies aeronautical services (fueling, hangaring, tie-down and parking, aircraft rental & repair, flight instruction, etc.) for general and corporate aviation



Virginia Aviation Potential



Average salaries for different careers:

- Airline Pilot (\$209,000)
- Commercial Pilots (\$130,000)
- Air Traffic Controllers (\$158,000)
- Airfield Operations Specialists (\$43,000)
- Flight Attendants (\$51,000)
- Aviation Maintenance Technician (\$50,000)

Virginia Aviation Initiatives & Growth



- Virginia organizations doing research into Advanced Air Mobility (UAV Taxis)
- Virginia is home to the country's largest commercial UAS company, DroneUp
- Virginia provides support for the Mid-Atlantic Spaceport on Wallops Island, the facility that launches satellites into near Earth orbit and many of the payloads to the International Space Station.

Aviation Potential



Auto Body and Glass Repair	HS diploma or equivalent	\$44,190
<u>Auto Service Technicians & Mechanics</u>	Certification	\$44,050
<u>Diesel Service Technicians & Mechanics</u>	HS diploma or equivalent	\$50,200
<u>Electrical & Electronics Installers and Repairers</u>	Certification or Licensure	\$62,020
<u>Heavy Vehicle & Mobile Equip Service Technicians</u>	HS diploma or equivalent	\$53,370
<u>Electricians</u>	HS diploma or equivalent & Certification or Licensure	\$56,900
<u>Mech Engineering Technicians</u>	Associate's degree	\$58,230
<u>Aerospace Eng & Operations Technicians</u>	Associate's degree	\$68,570
<u>Electro-mechanical Technicians</u>	Associate's degree	\$59,800
<u>Electrical & Electronics Eng Technicians</u>	Associate's degree	\$67,550

Aviation Potential

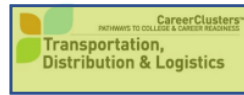


A&P licensed technicians are commonly employed by:

- Aviation Industry
- Aerospace Industry
- Unmanned Aerial Vehicle (UAVs) Industry
- Energy Industry
- Entertainment Industry
- Mass Transit Industry



Aviation Pathways



Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

Sample of Career Specialties / Occupations	<p>Air/Space Transportation: Transportation Managers (Air) * Commercial Pilots * Flight Engineers * Flight Attendants * Dispatchers (Air) * Traffic Managers * Air Traffic Controllers * Aircraft Cargo Handling Supervisors * Airfield Operations Specialists</p> <p>Rail Transportation: Transportation Managers (Rail) * Dispatchers (Rail) * Traffic Managers * Locomotive Engineers * Locomotive Firers * Railway Conductors and Yardmasters * Railroad Brake, Signal and Switch Operators * Railway Engineers, Dinkey Operators, and Hostlers</p> <p>Water Transportation: Transportation Managers (Water) * Dispatchers (Water) * Traffic Managers * Captains * Mates * Pilots of Water Vessels * Sailors and Marine Oilers * Able Seamen * Ordinary Seamen * Ship and Boat Captains * Ship Engineers * Bridge and Lock Tenders</p> <p>Road Transportation: Transportation managers (Road) * Dispatchers (Truck/Bus/Taxi) * Traffic Managers * Truck Drivers (Tractor-Trailer) * Truck Drivers (Light or Delivery Services) * Bus Drivers (Transit and Intercity) * School Bus Drivers * Taxi Drivers and Chauffeurs</p> <p>Transit Systems: Transportation Managers (Mass Transit) * Dispatchers (Bus) * Traffic Managers * Dispatchers (Rail) * Traffic Managers * Bus Drivers (Transit and Intercity) * Subway and Streetcar Operators</p>	<p>Logistics: Logistics Managers * Logistics Engineers * Logistics Analysts * Logistics Consultants * International Logistics Specialists</p>	<p>Warehouse Managers: Storage and Distribution Managers * Industrial and Packaging Engineers * Traffic, Shipping and Receiving Clerks * Production, Planning, Expediting Clerks * First-line Supervisors/Managers of Helpers * Laborers, and Material Movers (Hand) * First-line Supervisors /Managers of Transportation and Material (Moving Machine and Vehicle Operators) * Laborers and Freight, Stock and Material Movers (Hand) * Car, Truck and Ship Loaders * Packers and Packers-hand</p>	<p>Facility/Facility Maintenance: Managers and Engineers * Industrial Equipment Mechanics * Industrial Electricians, * Electrical/Electronic Technicians</p> <p>Mobile Equipment: General—Mobile Equipment Maintenance Managers * Electrical and Electronic Installers and Repairers (Transportation Equipment) * Mobile Heavy Equipment Mechanics</p> <p>Air/Space—Aerospace Engineering and Operations Technicians: * Aircraft Mechanics and Service Technicians * Airframe Mechanics * Power plant Specialists * Avionics Technicians</p> <p>Water—Ship Mechanics and Repairs: * Motorboat Mechanics * Automotive/Truck Mechanics and Body Repairers Rail—Rail Car Repairers * Signal and Track Switch Repairers * Rail Locomotive Mechanics and Repairers Road—Electronic Equipment Installers and Repairers (Motor Vehicle) * Automotive Body and Related Repairers * Automotive Service Technicians and Mechanics * Automotive Master Mechanics * Automotive Specialty Technicians * Bus and Truck Mechanics and Diesel Engine Specialists * Motorcycle Mechanics * Bicycle Repairers</p>	<p>General—Intermodal—Urban and Regional: Planners * Civil Engineers * Engineering Technicians * Surveying and Mapping Technicians * Government Service Executives * Environmental Compliance Inspectors</p> <p>Air/Space—Air Traffic: Controllers * Aviation Inspectors Road—Traffic Engineers * Traffic Technicians * Motor Vehicle Inspectors * Freight Inspectors Rail—Railroad Inspectors Water—Marine Cargo Inspectors * Vessel Traffic Control Specialists Transit—Public Transportation Inspectors Other—Regulators * Inspectors and other federal/state/local transportation agency jobs</p>	<p>Health and Safety: Managers * Industrial Health and Safety Engineers * Environmental Scientists and Specialists * Environmental Science and Protection Technicians * Environmental Managers and Engineers * Environmental Compliance Inspectors * Safety Analysts</p>	<p>Marketing: Managers, * Sales Managers * Sales Representatives of Transportation /Logistics Services * Reservation, Travel and Transportation Agents * Cargo and Freight Agents * Customer Service Managers * Cashiers, Counter and Rental clerks</p>
Pathways	Transportation Operations	Logistics Planning and Management Services	Warehousing and Distribution Center Operations	Facility and Mobile Equipment Maintenance	Transportation Systems/ Infrastructure Planning, Management, and Regulation	Health, Safety and Environmental Management	Sales and Service

When you think Transportation, Distribution, & Logistics, many just think of rail and maritime. But Aviation touches or is touched by ALL these careers highlighted.

Aviation Pathways



Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

Sample Career Specialties/Occupations	Production	Manufacturing Production Process Development	Maintenance, Installation & Repair	Quality Assurance	Logistics & Inventory Control	Health, Safety and Environmental Assurance
<ul style="list-style-type: none"> Assembler Automated Manufacturing Technician Bookbinder Calibration Technician Electrical Installer and Repairer Electromechanical Equipment Assembler Extruding and Drawing Machine Setter/Set-Up Operator Extrusion Machine Operator Foundry Worker Grinding, Lapping, and Buffing Machine Operator Hand Packers and Packager Hoist and Winch Operator Instrument Maker Large Printing Press Machine Setter and Set-Up Operator Machine Operator Manager, Supervisor Medical Appliance Maker Milling Machine Setter, Set-Up Operator Milwright Operator, Tender, Cutter/Brazer, Solderer, Machine Operator Painter Pattern & Model Maker Precision Layout Worker Precision Optical Goods Worker Production Associate Sheet Metal Worker Solderer and Brazier Tool and Die Maker Welder 	<ul style="list-style-type: none"> Design Engineer Electrical and Electronics Technician and Technologist Electronics Engineer Engineering and Related Technician and Technologist Engineering Technician Industrial Engineer Labor Relations Manager Manufacturing Engineer Manufacturing Technician Power Generating and Reactor Plant Operator Precision Inspector, Tester, and Grader Process Improvement Technician Production Manager Purchasing Agent Supervisor 	<ul style="list-style-type: none"> Biomedical Equipment Technician Boilermaker Communication System Installer/Repairer Computer Installer/Repairer Computer Maintenance Technician Electrical Equipment Installer/Repairer Facility Electrician Industrial Electronic Installer/Repairer Industrial Facilities Manager Industrial Machinery Mechanic Industrial Maintenance Electrician Industrial Maintenance Mechanic Industrial Maintenance Technician Instrument Calibration and Repairer Instrument Control Technician Job/Fixture Designer Laser Systems Technician Maintenance Repairer Major Appliance Repairer Meter Installer/Repairer Milwright Plumber, Pipefitter and Steamfitter Security System Installer/Repairer 	<ul style="list-style-type: none"> Calibration Technician Inspector Lab Technician Process Control Technician Quality Control Technician Quality Engineer SPC Coordinator 	<ul style="list-style-type: none"> Communications, Transportation and Utilities Manager Dispatcher Freight, Stock, and Material Mover Industrial Truck and Tractor Operator Logistical Engineer Logistician Material Associate Material Handler Material Mover Process Improvement Technician Quality Control Technician Traffic Manager Traffic, Shipping, and Receiving Clerk 	<ul style="list-style-type: none"> Environmental Engineer Environmental Specialist Health and Safety Representative Safety Coordinator Safety Engineer Safety Team Leader Safety Technician 	
Pathways	Production	Manufacturing Production Process Development	Maintenance, Installation & Repair	Quality Assurance	Logistics & Inventory Control	Health, Safety and Environmental Assurance
CC /CCTC /CCTC Ready	The Common Career Technical Core (CCTC) includes a set of standards for each of the 16 Career Clusters™ and their corresponding Career Pathways that define what students should know and be able to do after completing instruction in a program of study. The CCTC also includes an overarching set of Career Ready					

When you think Manufacturing, think Aviation. Aviation touches or is touched by ALL these careers highlighted.

Aviation Pathways



Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

Sample Career Specialties / Occupations	<p>Aerospace Engineer* Aeronautical Engineer* Agricultural Engineer* Agricultural Technician* Application Engineer* Architectural Engineer* Automotive Engineer* Biomedical Engineer* Biotechnology Engineer* Chemical Engineer* Civil Engineer* Communications Engineer* Computer Engineer* Computer Hardware Engineer* Computer Programmer* Computer Science Technician* Computer Software Engineer* Construction Engineer* Consultant* Development Engineer* Drafter* Electrical Engineer* Electrician* Electronics Technician* Energy Transmission Engineer* Environmental Engineer* Facilities Technician* Fire Protection Engineer* Geothermal Engineer* Hazardous Waste Engineer* Hazardous Waste Technician* Human Factors Engineer* Industrial Engineer* Industrial Engineering Technician* Licensing Engineer* Manufacturing Engineer* Manufacturing Technician* Manufacturing Processes Engineer* Marine Engineer* Materials Engineer* Materials Lab & Supply Technician* Mechanical Engineer* Metallurgic Engineer* Mining Engineer* Naval Engineer* Network Technician* Nuclear Engineer* Ocean Engineer* Operations Research Engineer* Packaging Engineer* Packaging Technician* Petroleum Engineer* Pharmaceutical Engineer* Plastics Engineer* Power Systems Engineer* Product Design Engineer* Project Engineer* Project manager* Prototype Engineer* Quality Engineer* Quality Technician* Radio/TV Broadcast Technician* Radiology Engineer* Researcher* Safety Engineer* Software Engineer* Sound Technician* Structural Engineer* Survey Technician* Systems Design Engineer* Technical Sales Manager* Technical Writer* Telecommunications Engineer* Textile Engineer* Transportation Engineer* Nuclear Engineer and Procurement Engineer</p>	<p>Analytical Chemist* Anthropologist* Applied mathematician* Archeologist* Astronomer* Astrophysicist* Atmospheric scientist* Biologist* Botanist* CAD operator* Cartographer* Chemist* Communications technologist* Conservation scientist* Cosmologist* Cryptographer* Crystallographer* Demographer* Dye chemist* Ecologist* Economist* Electronmicroscopist* Environmental scientist* Expert systems scientist* Geneticist* Geologist* Geophysicist* Geoscientist* Herpetologist* Hydrologist* Ichthyologist* Inorganic chemist* Laboratory Technician* Mammalogist* Marine scientist* Materials analyst* Materials scientist* Mathematician* Mathematics* Metallurgist* Meteorologist* Microbial Physiologist* Mycologist* Nanobiologist* Nuclear chemists* Nuclear technician* Numerical analyst* Nutritionist* Oceanographer* Organic chemist* Ornithologist* Paleontologist* Physicist* Polymer scientist* Programmer* Protein scientist* Protozoologist* Quality-control scientist* Radio chemist* Research chemist* Research Technician* Science Teacher* Lab Technician* Scientific visualization / graphics expert* Spectroscopist* Statistician* Technical writer* Technologist* Toxicologist* Zoologist*</p>
Pathways	Engineering and Technology	Science and Math
CCTC / Career Ready Practices	<p>The Common Career Technical Core (CCTC) includes a set of standards for each of the 16 Career Clusters™ and their corresponding Career Pathways that define what students should know and be able to do after completing instruction in a program of study. The CCTC also includes an overarching set of Career Ready Practices that apply to all programs of study. The Career Ready Practices include 12 statements that address the knowledge, skills and dispositions that are important to becoming career ready.</p>	

When you think STEM, think Aviation. Aviation is touched by ALL these careers highlighted.

Aviation Resources & Next Steps



Elementary School Programs

Experimental Aircraft Association
(EAA) AeroEducate

Civil Air Patrol (CAP)
Aerospace Connections in Education

Virginia Department of Aviation
ICON A5

Middle/Junior High Programs



CAP Aerospace Excellence Award
(AEX) Program

Aviation
Resources &
Next Steps



Aviation Resources & Next Steps



NEXTGEN
A-V-I-A-T-O-R-S

High School CTE Programs

CAP AEX Program

USAF *Aim High Flight Academy*

ATEC *Choose Aerospace* curriculum

AOPA *You Can Fly* curriculum

USAF JROTC *Flight Academy*

AFA CyberPatriot & StellarXplorer Program

Aviation Resources & Next Steps



Elementary School
Programs

Civil Air Patrol (CAP)
Aerospace
Connections in
Education

Virginia Department
of Aviation ICON A5

Experimental Aircraft Association (EAA) AeroEducate

Middle/Junior High
Programs

NEXTGEN
AVIATORS 

CAP Aerospace Excellence Award (AEX) Program

USAF *Aim High Flight
Academy*

ATEC *Choose Aerospace*
curriculum

AOPA *You Can Fly*
curriculum

USAF JROTC *Flight Academy*

AFA CyberPatriot &
StellarXplorer Program

NEXTGEN
AVIATORS 
by  Dynamic Aviation

Aviation Resources & Next Steps



[FAA Education Resources](#)

K-12 ed resources & Scholarships



[VSGC Pilot Pathways Program](#)



[AOPA You Can Fly](#) HS STEM

curriculum



[Tango Flight](#) aviation maintenance
program where students build a kit
aircraft

Program	Length	Description	Outcome	Eligible Audience	Student Cost	School Cost
<u>Virginia Space Grant Consortium Pathways Flight Academies</u>	12 days	Immersive experience providing ground school + 10 hours of flight instruction with possible solo flight	Culminates in their first solo flight upon successful completion of the program and eligibility to be selected for 40 hours of flight training plus paid private pilot license fee.	Virginia resident students with a <ul style="list-style-type: none"> • ≥ 3.0 GPA • 16-year-old U.S. citizens • able to pass an FAA flight physical exam 	\$0	\$0
<u>AOPA You Can Fly Curriculum</u>	4 years	Pilot & UAS Pilot	<ul style="list-style-type: none"> • Professional development for teachers teaching any of the courses for the first time • Ongoing professional development available via webinars & other e-formats • AOPA's rich library of educational resources provide a wealth of information to support teachers in their instructional journey. 	9-12 grades	\$0	\$0
<u>Tango Flight</u>	2 years	Hands-on build of kit aircraft consistent with U.S. Code of Federal Regulations	Students work with instructor and industry mentors to develop maintenance skills as they work together to build a flyable kit aircraft. Although the program is student-driven, it is instructor-led.	11 th and 12 th grades	\$0	\$

Aviation Resources & Next Steps



[Aim High Flight Academy](#)

free flight training for 16-23



[EAA AeroEducate](#)

STEM activities in & out of the classroom



[Choose Aerospace curriculum](#)

(Aviation Tech Ed Council with Clemson
Univ Workforce Development Center)

Program	Length	Description	Outcome	Eligible Audience	Student Cost	School Cost
<u>Aim High Flight Academy (AHFA)</u>	3 weeks	Introductory flight program at various college universities across the country	Helps increase an individual's Pilot Candidate Selection Method score with the completion of up to 15 flight hours .	High school students (ages 16 – 18) or ROTC and USAFA cadets who have a 3.0 GPA or better	\$0	\$0
EAA Aero Educate	3 weeks	Age-based activities to ignite curiosity in aviation and provide clear pathways to aviation and aerospace industry careers	Support children, their parents, and their teachers in exploring aviation using STEM activities and experiments	K-12 students Parents Teachers/ Educators	\$0	\$0
ATEC Choose Aerospace	2 years	Curriculum aligns with FAA Mechanic Certification Standards to cover the general knowledge and skill required for FAA mechanic certification.	Through ATEC's network of FAA-certificated aviation maintenance schools, students will have the opportunity to transfer credit to technical schools across the U.S.	11 th and 12 th grades	\$0	\$200 per student

Aviation Resources & Next Steps



[Air Force JROTC Flight Academy](#)

free Private Pilots license for AFJROTC Cadets



[Civil Air Patrol Education Program](#)

Program	Length	Description	Outcome	Eligible Audience	Student Cost	School Cost
<u>Air Force JROTC Flight Academy</u>	8 weeks	Summer aviation training program, conducted at partnering universities nationwide	Students are awarded a Private Pilot's Certification upon successful completion of the program.	AFJROTC cadets	\$0	\$0
Civil Air Patrol	Open ended	<ul style="list-style-type: none"> • K-12 books – a large assortment of books aligned with national academic standards • K-12 STEM Kits in three disciplines (aviation, space, cyber) • Pre- and Post tests and all associated educational materials for each STEM Kit • K-12 Aerospace Education Excellence (AEX) award program with AEX certificates for educator and student participants • K-6 Aerospace Connections in Education (ACE) program, with grade-level specific content and materials shipped to ACE teachers. • Teacher Orientation Program (TOP) flights where CAP pilots will fly teachers at their closest airport for a great flying experience to share with students. 		Air Education Members (teachers who join)	\$0	\$0

Virginia Space Grant Consortium: FREE programs for Virginia K-12 students to interest them in aviation/ aerospace careers:

- [Plant the Moon Challenge NASA Space Grant Regional Expansion Project](#)
Virginia teams, hands-on STEM learning
- [Technology Exploration Saturdays](#)
Virginia Peninsula 7th and 8th grade students and their parents
- [Building Leaders for Advancing Science and Technology](#)
Virginia 8th and 9th grade students, residential college experience and hands-on STEM activities
- [Virginia Space Coast Scholars](#)
Virginia 10th grade students, online NASA course and residential academy at NASA Wallops Flight Facility
- [Virginia Aerospace Science and Technology Scholars](#)
Virginia 11th and 12th grade students, online space course and residential academy at NASA Langley Research Center
- [Virginia Earth System Science Scholars](#)
Virginia 11th and 12th grade students, online Earth science course and residential academy at NASA Langley Research Center
- [Pathways Flight Academies](#)
Virginia students at least 16 years old, residential flight training program

Virginia Space Grant Consortium

VSGC also runs FREE opportunities for Virginia undergraduate students:

- [STEM Takes Flight](#) NASA research experience for Virginia community college students
- [Community College Scholarships](#)
- [STEM Bridge Scholarships](#)
- [Undergraduate Research STEM Scholarships](#)
- [ACRP University Design Competition](#) - U.S. undergraduate and graduate students

And several FREE opportunities for Virginia graduate students:

- [Graduate Research STEM Fellowships](#)
- [ACRP University Design Competition](#) U.S. undergraduate and graduate students
- [ACRP Graduate Research Awards](#) - U.S. graduate students

VSGC connects Virginia STEM students to paid internships with the FREE [Commonwealth STEM Industry Internship Program](#)

VSGC connects Virginia STEM students to paid internships with FREE [drone learning programs](#)

AeroEducate™

Aviation Resources & Next Steps



- FREE aviation-based STEM activities for youth ages 5-18, parents, and educators
 - Web-hosted
 - Hands-on activities
 - Age/Grade appropriate and tied to SOLs
- Provides clear pathways to aviation and aerospace industry careers, while offering best-in-class aviation-themed activities for educators and EAA chapters to ignite a passion for aviation
- To sign up visit <https://www.aeroeducate.org/>



TangoFlight™



Aviation Resources & Next Steps



- Inspiring the next generation of engineers, pilots, aviation mechanics and technicians.
- Providing meaningful learning with real hands-on training as students apply classroom knowledge to build an actual, FAA certified airplane
- Partnered with Wichita State University and the Airbus Foundation, we provide students;
 - A strong mechanical, electrical and aerospace engineering foundation and
 - Fundamental technical and mechanical skills to build an FAA certified airplane

X-Plane 12™



Aviation Resources & Next Steps



- Ultra-realistic flight simulator
- Able to use real-world, current weather with simulator environment
- Teachers can use it to teach aerodynamic and weather effects (i.e. crosswinds (vectors), thermals, wake turbulence, and snow and ice accumulation)
- One free license for use in educational settings

Aim High Flight Academy

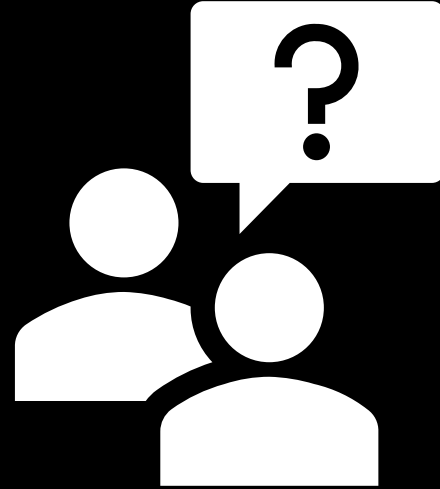
Aviation Resources & Next Steps



- 3-week introductory flight program for high school students (ages 16 – 18)
- Entirely funded by flight school scholarships
NO COST for those selected
- Run at various colleges & universities across the country
- Application window opens 1 Oct & closes 30 Nov.
- There are no military obligations or commitments by participating in this program.



Questions?



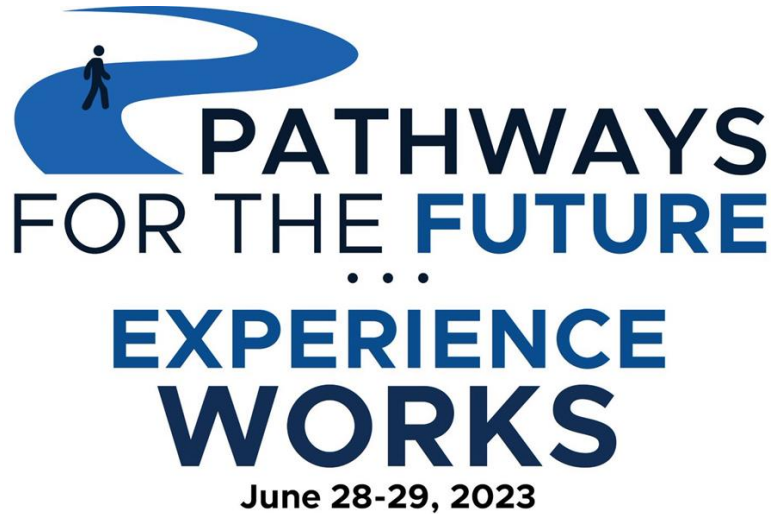
COURSE CONNECTIONS

- **AEROSPACE ENGINEERING**
- **AEROSPACE TECHNOLOGY**
- **AIR TRAFFIC CONTROLLER**
- **AIRCRAFT PILOT TRAINING**
- **AVIATION MAINTENANCE TECHNOLOGY**
- **AVIATION OPERATIONS MANAGEMENT**
- **UNMANNED AIRCRAFT SYSTEMS**

CREDENTIALS/CERTIFICATIONS

- **FAA PRIVATE PILOT WRITTEN TEST**
- **FAA REMOTE PILOT SMALL UNMANNED AIRCRAFT SYSTEMS
CERTIFICATION**
- **PRE-ENGINEERING CERTIFICATION**
- **SMALL UNMANNED AIRCRAFT SYSTEM (UAS) SAFETY CERTIFICATION**





Earn Your PD Points!

Please complete the
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Zoom session