



# CAREERS IN AVIATION & AEROSPACE



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# INTRODUCTION

## WHAT WOULD LIFE BE WITHOUT AIRPLANES?

Today, aviation touches nearly every aspect of our daily lives. It's not just about business and vacation travel; it's about international mail delivery, overnight couriers, food and supply delivery to remote communities. It enables business and world trade to exist. It's about national defence, and global security and peacekeeping. It's about saving lives through medevacs, air ambulance services, search and rescue missions, and international organ donation programs. Aviation is an integral part of our society, and there is a growing need for qualified people in the industry.



## DID YOU KNOW? ...

### Aviation Facts

- On average, an aircraft leaves the surface of the earth every three seconds.
- Statistically speaking, air transport is the safest mode of transportation.
- The helicopter was actually originally conceived by Leonardo da Vinci in 1483.
- A Boeing 747 has 18 wheels, a spiral staircase, and room to park 45 cars on its wing.
- The air flowing through one Boeing 767-400ER engine at take-off power could inflate the Goodyear Blimp in seven seconds.
- It takes about 227 liters of fuel per passenger to get from New York to London (about 5,580 km) on board a Boeing 767-400ER. The same volume of gasoline would propel an economy car only about half of that distance.
- A Boeing 747-400 has six million parts, half of which are fasteners.
- Helicopters are safer to fly in bad weather than fixed-wing aircraft because they can slow down, hover, and fly backward or sideways.
- The captain and the first officer of an aircraft always eat different meals during a flight, in case one of them gets sick.
- Each engine on a Boeing 747 weighs almost 4,300 kg, costs about 8 million dollars, and burns about 45.4 liters of fuel per minute when cruising. Altogether the four engines account for about 5% of the total weight of a full 747 upon takeoff.
- On average, 61,000 people are airborne over the U.S. at any given hour.
- An Unmanned Aerial Vehicle (UAV) (also known as a Remotely Piloted Vehicle [RPV], or an Unmanned Aircraft System [UAS]) is an aircraft that flies without a human crew on board, piloted by a human crew at ground control stations.
- The “white smoke” behind airplane is actually water vapor mixed with exhaust gases; it is called a condensation trail or “contrail.” Water is a by-product of combustion. Contrails occur at particular altitudes each day depending on atmospheric conditions.
- Runways are selected according to prevailing wind because airplanes usually take off and land more or less facing into the wind.



## EMPLOYMENT OPPORTUNITIES

Today's aviation maintenance and aerospace industry holds a wealth of opportunity as it is one of the fastest growing sectors in Canada and the world. Despite our relatively small economy (in global terms), the Canadian aerospace industry ranks among the top five in the world and has job opportunities that are among the most exciting, interesting, and challenging careers out there.

The range of knowledge needed to design, build and keep these high-speed machines safely in the air is vast, employing engineers, designers, technicians, mechanics, machinists, technologists, and inspectors who may specialize in physics, chemistry, hydraulics, pneumatics, metallurgy, welding, avionics, composites, gas dynamics, and microelectronics—just to name a few.

Careers in aviation and aerospace are not limited simply to being a pilot or a flight attendant. In fact, most jobs are in manufacturing, and in maintenance, repair and overhaul. As a member of Canada's aviation and aerospace industry, you will serve both domestic and international markets, in manufacturing or servicing, repairing, overhauling, or retrofitting many types of aircraft and their components.

These jobs can take place at airplane hangers, airports, approved maintenance organizations, machine shops, manufacturing companies, on the flight line, in an approved training organization, and in the air force. You might work on engines, avionics systems, landing gears, or flight simulators. You could design or build the plane or pieces of it. You could assemble the plane, inspect it or fix it.





Skills learned are transferable throughout Canada. The jobs are challenging and require continuous learning.

Right now is the time to enter these industries, because the workforce is getting older and many current workers are close to retirement. Canada needs tens of thousands of young people to enter this vital industry in order for it to continue to grow. It needs pilots, machinists, mechanics, fabricators & many more.

No matter what aviation or aerospace career attracts your interest, you can be sure your choice will be exciting, rewarding, unique and fun.

## WHAT DOES IT TAKE?

The aviation and aerospace industry offers many exciting, rewarding and unique careers that challenge many interests. Although there are many career choices, they all have similar basic requirements. The “ideal candidate” needs solid computer knowledge; possesses a college diploma or university degree\*; has strong manual skills, good communication skills (written and spoken), an eye for detail; and is very safety conscious. Company requirements may also include federal government security clearance.

Many colleges and training organizations require English, math and sciences for entrance. High school students should make sure that they are taking all the required courses and making the required grades for the post-secondary program they wish to enter.

Also available at many high schools across Canada is the Aviation and Aerospace Orientation Program, which gives an introduction to aviation maintenance, manufacturing and the principles of flight. (A list of schools may be found on-line at [www.avaerocouncil.ca](http://www.avaerocouncil.ca))

The Canadian Council for Aviation & Aerospace, has created this guide in order to outline the many careers available in aviation and aerospace. Take a look and maybe you'll find exactly what you've been looking for:

*a promising future that soars ...*

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\* A diploma or degree may not be necessary for all occupations.



# WHAT IS CCAA

The Canadian Council for Aviation & Aerospace (CCAA) is dedicated to ensuring the Canadian aviation and aerospace industry has enough workers with the right skills to meet industry needs.

CCAA works with all segments of the industry to develop tools and solutions for specific skills and demographic needs of the industry.

## **CCAA**

- has two main areas of focus: skills development and industry demographics (supply and demand for particular skills);
- develops and maintains National Occupational Standards with supporting Logbooks for certifying professionals, and Curricula for post-secondary training organizations;
- certifies professionals in many occupations;
- audits and accredits aviation and aerospace training programs that use CCAA curricula;
- promotes safety, professionalism and standardization of industry through national communications and projects with industry;
- promotes aviation and aerospace to Canadian youth through its high school curriculum, the Aviation and Aerospace Orientation Program, and through its relationship with the Air Cadet League of Canada.

## **CCAA'S MISSION**

CCAA's mission is to develop, promote and administer a comprehensive and effective human-resource (HR) strategy for the Canadian aviation and aerospace industry.

# CERTIFICATION

## How to Get Certified

### **WHY SHOULD I BECOME CERTIFIED?**

CCAA certification is documented proof that you have met nationally recognized standards in your occupation. Employers, education institutions, and industry workers everywhere instantly recognize a CCAA-certified individual to be a highly skilled and qualified worker who can demonstrate exceptional knowledge and competence on the job.

Being CCAA-certified adds greatly to your professional credentials, giving you a marked advantage in the competitive job market. CCAA certification is accepted nationally as a proven benchmark of quality because its certification standards demand the highest degree of professional competence in the industry today.

If you're aiming to become one of the best in your field, CCAA-certification is definitely the way to go.



# LICENSING

## TRANSPORT CANADA LICENSING

In the aviation maintenance industry, Transport Canada provides licensing for three categories of aircraft maintenance engineer (AME). The AME licence is granted to Aircraft Maintenance Technicians, Aircraft Structures Technicians, and Avionics Maintenance Technicians who pass the pre-requisites and rigorous standard testing by Transport Canada in their given specialty.

AME-M is an Aircraft Maintenance Engineer with a maintenance specialty

AME-E is an Aircraft Maintenance Engineer with an avionics specialty

AME-S is an Aircraft Maintenance Engineer with a structures specialty

Licensed engineers are authorized to sign maintenance releases and can certify air-worthiness of aircraft, engines, or system components as identified in the licence category.

To apply for an AME licence, applicants must provide:

- Proof of Age
- Proof of Training
- Proof of Knowledge
- Proof of Experience using a logbook

N.B.: CCAA logbooks have been approved for use by Transport Canada.

- Proof of Skill



# CAREERS IN AVIATION AND AEROSPACE

The following section contains brief descriptions of a variety of occupations in aviation and aerospace, with suggested training requirements and places of employment.

There are many organizations where these jobs are performed and for simplicity we have grouped similar organizations.

The designation Aircraft Maintenance, Repair and Overhaul Organizations (MROs) includes Approved Maintenance Organizations (AMOs).

The term Aircraft Operators (AO) includes:

- Air carriers, both fixed-wing (airplanes) and rotary-wing (helicopters) aircraft
- Cargo carriers
- Business aircraft operators
- Flight training units
- Private aircraft owners
- Specialty operations (such as agriculture, fire fighting, air ambulances, and sight seeing)

# AEROSPACE MATERIALS SPECIALIST

The Aerospace Materials Specialist (AMS) plays a vital behind-the-scenes role in the aviation industry. While some technicians work directly on the aircraft and aircraft parts, the AMS is responsible for ensuring that the technicians always have the correct parts, components, and raw materials needed for work on the aircraft.

The AMS is an expert in materiel handling and maintaining the inventory of stored items — shipping, receiving, stocking, moving, or issuing crucial support products such as parts, components, sealants, lubricants, and raw materials in routine and AOG (aircraft on ground) situations. The AMS tags and catalogues every single item for immediate and future use. The workplace is a clean shop environment, although the AMS is sometimes requested to work directly on the aircraft.





The AMS also becomes a specialist in customs documentation for import/export, in quarantine stores, and in the handling and issuing of dangerous goods and HazMat (hazardous materials) according to Canada's Transportation of Dangerous Goods Act (TDGA) requirements.

The modern aircraft contains millions of pieces, parts, and sub-assemblies: the ability to keep track of all these complex parts and components, and the ability to know where each piece is supposed to fit is essential to this key support role. Other techs may know how to work on their parts, but the AMS always knows exactly which parts they need, where to find them, and how to get them to the job site.

If you like troubleshooting and have a natural ability for organization and logistics, then being an Aerospace Materials Specialist is a good area to explore.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Maintenance program at a college or approved training organization (an asset)
- Comprehensive on-the-job training (available at most companies)
- Experience as an Aviation Stock Keeper or Aviation Maintenance Technician (an asset)
- CCAA certification (an asset)

## **OTHER REQUIREMENTS:**

- Thorough familiarity with safe work practices, and rules and regulations
- Experience in working with hazardous materials
- Self-motivated, organized, detail oriented, and precise
- Ability to shift priorities quickly and work within tight time constraints
- Experience with inventory, logistics, troubleshooting, and analyzing data
- Investigative skills
- Strong interpersonal and communication (oral and written) skills in dealing with personnel from other departments, customers and manufacturers' representatives, along with shop personnel — must be a team player
- Proficiency with computers and software (Word, Excel)

## **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- Manufacturers
- Supply Chain Management Organizations
- The Canadian Forces

## **JOB TITLES:**

- Aviation Stock Keeper/Storekeeper
- HazMat Specialist
- Import/Export Specialist
- Materials Technologist
- Purchaser
- Shipping/Receiving Agent



# AIRCRAFT GAS TURBINE ENGINE REPAIR AND OVERHAUL TECHNICIAN

The gas turbine is one of the greatest inventions of this past century: unique and simple in its basic operation, yet immensely complex in its design. In the aviation and aerospace industry, gas turbine engines are used to power jets and turbo-prop aircraft. Aircraft Gas Turbine Engine Repair and Overhaul Technicians enjoy a very challenging and rewarding career that requires a high degree of responsibility and skill. Technicians repair and overhaul gas turbines, rebuild gas turbine engines, balance components and assemblies, test and troubleshoot gas turbines, and inspect gas turbine engine components and assemblies. They work in sophisticated shop environments and test cells, complete with computer-assisted systems and leading-edge tools, machinery, and techniques. In some companies, the job of the gas turbine engine repair and overhaul technician is divided into three roles; inspection, disassembly/assembly and testing.

Since so many of today's aircraft rely on gas turbine engines to fly, the Gas Turbine Technician will always be needed by airlines, maintenance, repair and overhaul organizations (MROs), and engine manufacturers.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of a Gas Turbine Repair and Overhaul program at a college or approved training organization, or a company-sponsored training program or completion of a Gas Turbine Repair and Overhaul apprenticeship program (required)
- CCAA Certification (an asset)



### **OTHER REQUIREMENTS:**

- Strong reading comprehension skills
- Ability to interpret technical manuals and drawings
- Good manual dexterity and a strong mechanical aptitude for intricate assembly procedures

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- Repair and Overhaul Shops of Engine Manufacturers
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Engine Overhaul Mechanic
- Aircraft Engine Test Operator
- Engine Shop Technician

# AIRCRAFT INTERIOR TECHNICIAN

Aircraft Interior Technicians are master craftspeople – no matter what kind of cabin interior you could imagine or invent, they possess all the diverse skills needed to build it. These technicians maintain the quality of aircraft interiors and cabin furnishings, not only for purposes of appearance and ergonomics but also for safety and survival. They are responsible for maintaining oxygen, water, waste, entertainment, emergency systems, and safety and evacuation equipment. They are also responsible for aircraft reconfigurations, and must assess repairs, removals, and reinstallations of everything that has to do with interior components.

An Aircraft Interior Technician can transform a cargo airplane into a passenger aircraft by refitting the interior, or vice versa. They work in aircraft cabins and in the shop, and are familiar with the function, operation, and safety requirements of all aircraft passenger support systems. One of their tasks is to install placards, pathlights and emergency lighting. In addition, some Aircraft Interior Technicians may make structural modifications to seats and upholstery, clean and treat fabrics and make repairs to fiberglass. They may also fabricate specialized belts and cargo nets. Experience in electrical systems devoted to in-flight entertainment systems is also required. An Aircraft Interior Technician has a new job every day.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Interiors program at a college or approved training organization (an asset)
- Knowledge of AutoCAD (an asset)
- CCAA Certification (an asset)

## OTHER REQUIREMENTS:

- Training in working with fire-resistant fabrics/materials
- Knowledge of carpet laying techniques
- Knowledge of plastics, sewing, upholstery and cabinet making (an asset)

## EMPLOYMENT OPPORTUNITIES:

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Manufacturing Facilities
- Aircraft Operators
- Small Specialty Maintenance Shops
- The Canadian Forces

## JOB TITLES:

- Interior Technician
- Upholstery Trim Overhaul and Fabrication Technician



Photo Courtesy of Air Canada

# AIRCRAFT MAINTENANCE TECHNICIAN

Aircraft Maintenance Technicians (AMTs) have the critical task of keeping fixed-wing and rotary-wing aircrafts operating safely and efficiently. It is an important job – lives depend on the AMT. Servicing, repairing, and overhauling aircraft components and systems are the primary tasks of the AMT, who works on airframes, engines, propellers, and aircraft instruments, etc. Aircraft Maintenance is a challenging and exciting career – fast, intense, deadline-driven, and very high tech.

AMTs must understand the inter-relationship between the components in the aircraft; they work on jets, propeller-driven airplanes, and helicopters of all makes and models. They require sound knowledge of aircraft systems,





aerodynamics, aircraft structures and basic applied mechanics. AMTs use their troubleshooting skills to identify problems on the aircraft, including problems with aircraft components and systems, or with mechanical components and systems such as engines, hydraulic systems, flight-control systems and fuel systems, airframes, electrical systems, propellers, avionics equipment, and aircraft instruments. They disassemble and replace defective parts; interpret technical manuals, drawings and blueprints; record problems and the actions taken to correct them; and maintain an accurate statement of maintenance history of the aircraft. They also test, clean and lubricate repaired equipment.

To keep aircraft in peak operating condition, AMTs perform scheduled maintenance and inspections that have to meet strict industry regulations. When it comes to being an AMT, there can be no exception: you have to be a perfectionist with excellent communication skills and an unshakable commitment to safety. Work environments include working directly on the aircraft in the hanger, on the ramp, or on flightline, and bench repair.

AMTs have to be front-runners in the field in order to keep up with rapid advances in this high-tech work environment. If you're looking for a challenging career with limitless potential, be sure to look into becoming an Aviation Maintenance Technician.



## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aircraft Maintenance Technician program at a college or approved training organization, or completion of an Aircraft Maintenance Journeyman (apprenticeship) program (required)
- After 48 months of experience, AMTs can apply to Transport Canada to write the regulatory exam for a category “M” licence to become an Aviation Maintenance Engineer with a specialization in Maintenance (AME-M)
- CCAA Certification (an asset)

## **OTHER REQUIREMENTS:**

- Ease with heights and able to maintain balance while climbing ladders and work stands
- Good manual dexterity and strong manual skills – able to use a wide range of hand and power tools
- Computer skills
- A perfectionist with excellent communication and problem-solving skills
- Works well with strict deadlines and record-keeping in a fast, intense, deadline-driven, and very high tech work environment
- Sound knowledge of aircraft systems, aerodynamics, aircraft structures and basic applied mechanics

## **EMPLOYMENT OPPORTUNITIES**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- The Canadian Forces

## **JOB TITLES:**

- Aircraft Engine Technician
- Aircraft Engine Test Operator



# AIRCRAFT MECHANICAL ASSEMBLER

The Structures Assembler, or Mechanical Assembler, is the technician who puts the aircraft together. Working with sub-assemblies manufactured by others, and materials that are extremely costly, the mechanical assembler is responsible for the final assembly of the aircraft. They pull the pieces together, attaching them so they function as a unit, without fail.

An Aircraft Mechanical Assembler works with aircraft mechanical components and materials and is involved in the repair, installation, modification and inspection of these components and materials. Aircraft Mechanical Assemblers install pre-fabricated parts to manufacture fixed or rotary wing aircraft or aircraft subassemblies. Assemblers need skills in systems



integration, including the use of robotics, and optical and laser-based jigs and tools. The Aircraft Mechanical Assembler is involved in the set-up and operation of tools and equipment as well as some semi-automatic processes.

As part of a large construction team, mechanical assemblers work in a lab or at a workbench, building moving parts like rudder pedal linkage systems or aileron mixer components. This role requires precision and attention to detail, reading from blueprints and complex technical documents. Mechanical assemblers use heating and shrinking machinist techniques to fit bushings and bearings, creating the failsafe pivot parts that control the aircraft on the ground and in flight. They assemble and test hydraulic, pneumatic, and environmental systems, working with such diverse materials as fibreglass for wingtips, magnesium for castings, or even leather for control-column hinge-point security. Experienced mechanical assemblers conduct problem-solving at the flight line. If you like piecing together tricky puzzles and have a knack for mechanical processes, then you've found the right occupation.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Machinist Aviation Maintenance Technician, or Aerospace Manufacturing program at a college or approved training organization (an asset)
- In-house courses for specialist skills (may be available)
- CCAA Certification (an asset)

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturing Facilities
- Specialized Shop or Factory Assembly Line
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Assembler
- Airframe Assembler
- Environmental Systems Assembler
- Hydraulic Systems Assembler
- Pneumatic Systems Assembler
- Primary Flight Control Assembler
- Secondary Flight Control Assembler

# AIRCRAFT PROPELLER SYSTEMS TECHNICIAN

While people may be most familiar with jet aircraft, many regional commuter aircraft, military aircraft, and large numbers of small and private aircraft are propeller-driven. Highly skilled and specialized professionals, Aircraft Propeller Systems Technicians are responsible for the repair and overhaul of propeller systems. They work on propeller components both on and off the aircraft, and are involved in the repair, overhaul, modification, inspection, and testing of aircraft propeller components. They are responsible for the set-up and operation of tools and equipment as well as some semi-automatic processes.

Aircraft Propeller Systems Technicians must master the delicate art of blade-straightening, leading-edge replacement, blade balancing (both dynamic and static), plating and finishing, and troubleshooting. Some propellers are actually designed to change angle and speed in mid-flight. Aircraft Propeller Systems Technicians also work on governor controls and propeller hubs. It is a perfectionist's craft because even the slightest imbalance or improper curve in a propeller can directly affect an aircraft's performance and rate of fuel consumption.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aircraft Maintenance program at a college or approved training organization (required)
- CCAA Certification (an asset)



### **OTHER REQUIREMENTS:**

- Is safety-driven, meticulous, and accurate
- Able to read and interpret technical manuals and drawings
- Able to work with others cooperatively and follow directives precisely
- Interested in the principles of flight and aerodynamics and aircraft systems

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Component and Propeller Manufacturers
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- The Canadian Forces

### **JOB TITLES:**

- Aviation Propeller Technician
- Propeller Mechanic
- Propeller Systems Technician

# AIRCRAFT RECIPROCATING ENGINE TECHNICIAN

An Aircraft Reciprocating Engine Technician is the industry expert on the repair and overhaul of piston engines, including turbochargers. Also known as internal-combustion engines, reciprocating — or piston-driven engines — use very high pressures (as much as 1,000 pounds per square inch [psi]) in a cylinder during combustion.



Photo Ed Araquel, Courtesy of Leigh Badgley, Omni Film Productions Ltd.

Working on aircraft in the hangar and on the flight line, Aircraft Reciprocating Engine Technicians diagnose problems, troubleshoot, disassemble engines, refurbish, rebuild, and repair engine components, testing all its operations throughout the procedures. Considering there are more than 15,000 steps in an engine overhaul, this is no minor task. Reciprocating Engine Technicians must be incredibly meticulous, well organized, impervious to pressure, and able to read complex blueprints and mechanical drawings. They also must have an excellent aptitude for mechanical components, and be able to meet all quality assurance standards and safety regulations.

### **CAREER PATHWAY:**

- Completion of secondary school (required)
- Completion of an Aircraft Maintenance program at a college or approved training organization (usually required)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- Incredibly meticulous, well organized, impervious to pressure
- Able to read complex blueprints and mechanical drawings, interpret technical manuals and drawings
- Troubleshooting skills

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Organizations
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- Engine Manufacturers
- The Canadian Forces

### **JOB TITLES:**

- Aviation Reciprocating Technician

# AIRCRAFT REFUELLER

Aircraft cannot get off the ground without fuel and use enormous quantities in flight. Modern jet fuel is an extremely volatile substance that requires careful storage and handling. Responsibility for the safe handling and accurate delivery of jet fuels is a crucial function performed by Aircraft Refuellers.

Definitely not just a gas jockey, the Aircraft Refueller is trained in a variety of fuel dispatch and delivery procedures, because fuelling an aircraft is anything but simple. On today's aircraft, fuel is generally stored in an aircraft's wings, or, on ultra-long-range jetliners, also in the tail area. Fuel may be delivered using hand-based or more complex pumps, filter trucks, or tanker trucks that drive right up to the aircraft.

Refuellers work outdoors in all weathers. Besides being responsible for the safe and proper delivery of jet fuel, Refuellers are also trained in firefighting and are required to pay particular attention to the safe handling of environmentally hazardous materials. The occupation requires people with strong teamwork skills, who are reliable, always pay attention to detail, and have an excellent customer-service attitude, because they provide a vital service to private, commercial, and military clients. Aircraft Refuellers may specialize in Pressure or Non-Pressure refueling. They are also sometimes required to perform special procedures, such as de-fuelling aircraft, and responding to fuel spills and other environmental concerns.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Safety training (required)
- Training and experience as a Heavy Equipment Operator (may be offered in-house)
- Firefighting proficiency and airside security certification (may be offered in-house)
- CCAA certification (an asset)





## **EMPLOYMENT OPPORTUNITIES:**

- Air Fuelling Company
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- The Canadian Forces

## **JOB TITLES:**

- Aviation Fuelling Dispatcher
- Aviation Fuelling Instructor
- Aviation Into Plane Agent
- Tank Farm Operator

# AIRCRAFT SIMULATOR TECHNICIAN

Ever played a flight-sim video game? Well, Aircraft Simulator Technicians create and maintain working simulators. Working in aircraft simulator manufacturing and training environments, these technicians are required to operate, repair, modify, test, and troubleshoot aircraft simulators that are used for training and development purposes throughout the private, commercial, and military aviation sector.

Aircraft Simulator Technicians are qualified electrical/electronics technicians/technologists and/or avionics technicians who possess detailed knowledge of computer controls and of flight controls systems and instrumentation. Aircraft Simulator Technicians must be very versatile, with skills in computer software, real-time visuals, and motion systems, in order to meet the high demands of technological changes affecting the quickly evolving aerospace industry worldwide.

Airline operators such as Air Canada maintain a “fleet” of simulators for the training and upgrading of their pilots. The variety of types of simulators to be maintained by the Aircraft Simulator Technician are directly related to the types of aircraft operated by the airline. The Department of National Defence (DND) also requires the services of Aircraft Simulator Technicians to meet the needs of its unique fleet of aircraft simulators.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Electrical/Electronics Technician and/or Avionics Technician program at a college or approved training organization (recommended)
- CCAA Certification (an asset)

## OTHER REQUIREMENTS:

- Skills in computer software, real time visuals, and motion systems
- Additional specialized training for military applications, such as weapons/artillery

## EMPLOYMENT OPPORTUNITIES:

- Aerospace Organizations
- Aircraft Operators
- Simulator Manufacturers
- The Canadian Forces
- Training and Simulation Facilities

## JOB TITLES:

- Electrical/Electronics/Instrument Component Technician
- Simulator Technologist/Technician



# AIRCRAFT STRUCTURES TECHNICIAN

Aircraft Structures Technicians keep aircraft in perfect flying condition by constructing and repairing the metal and composite parts of an aircraft's fuselage, wings, and control surface. This is done through intensive machining, welding, and refinishing work.

The Aircraft Structures Technician's primary responsibilities include assessing damage and corrosion of aircraft structures; repairing, replacing and modifying sheet metal and/or composite structures; and (sometimes) repairing fabric surfaces and wood structures. They assess corrosion and fatigue damage to aircraft structures, and are able to manufacture, modify, repair and replace sheet metal and composite parts, structures, skins and



panels to exact tolerances. The structures technician in some shops may be asked to perform specialized work such as the fabrication, repair and modification of fluid lines and fittings, as well as the repair and replacement of windows and lenses. They are an important part of the maintenance of ageing aircraft, supplemental structural inspection programs and corrosion control programs. All duties are completed with the use of sophisticated and specialized tools and equipment.

This is a job critical to aviation safety and quality maintenance: aircrews depend on the skills of Aircraft Structures Technicians to keep them safe. These technicians are expected to follow aircraft fabrication and repair schemes with surgical precision, working with aluminum, titanium, and stainless steel structures, as well as with plastics and composites. All the repairs they make must meet the high endurance and tolerance standards set by both the manufacturers and the regulatory authorities. Safety and quality assurance must always come first. An Aircraft Structures Technician enjoys working with tools, machines, and state-of-the-art equipment, possessing stamina and the ability to master new procedures quickly.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aircraft Structures program at a college or approved training organization (required)
- After 36 months of experience, Aircraft Structures Technicians can apply to Transport Canada to write the regulatory exam for a category “S” licence to become an Aviation Maintenance Engineer with a specialization in Structures (AME-S)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- At ease with heights and working in confined spaces
- Attention to detail
- Ability to follow aircraft fabrication and repair schemes precisely
- Read and interpret structural repair manuals
- Ability to master new procedures quickly
- Ability to meet deadlines, work under pressure and handle/prioritize multiple projects



### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturing Organizations
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- The Canadian Forces

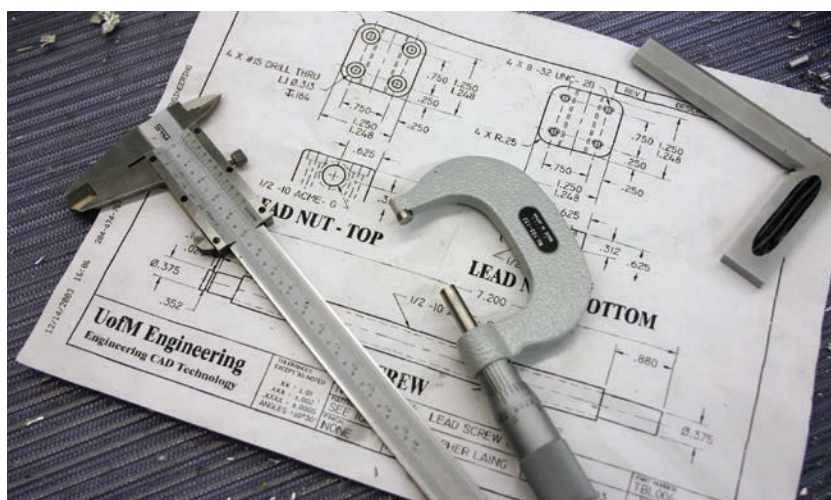
### **JOB TITLES:**

- Aircraft Sheet Metal Technician
- Aircraft Structure Repair Technician
- Aircraft Structures Manufacturing Technician



# AEROSPACE ENGINEERS

If there ever was an industry designed to meet the challenges and rewards of engineering, the aviation and aerospace industry is it, encompassing aerodynamics, avionics, design, engineering reliability, equipment, field service, flight testing, instrumentation, manufacturing of materials and weights and balance. There are different kinds of engineering: aeronautical, aerospace, ceramic, chemical, civil, electronic, electrical, engineering physics, industrial, mechanical, petroleum, metallurgical, computer and nuclear. What do all these engineers contribute? Take these examples: petroleum engineers research, develop, and supervise projects associated with the design and operation of gas turbine and piston aero-engines. Aerospace engineers research, design, and develop aircraft, spacecraft, missiles, aerospace systems, and their components. Whatever the area is that most interests you, there are countless opportunities within this dynamic, forward-thinking profession.





## **CAREER PATHWAY:**

- A Bachelor's degree in an engineering discipline (required)
- A Master's degree or doctorate in an Engineering Discipline (an asset)
- To approve engineering drawings and reports and to practice as a Professional Engineer (P.Eng.), a licence from a provincial or territorial association of professional engineers (required)

## **P.ENG. CERTIFICATION:**

Provincial Recognition or Accreditation is required to receive a Professional Engineering (P.Eng.) certification. Requirements for a professional engineering certification vary from province to province. To be eligible for certification, a candidate must have the following:

- Degree from an accredited educational program
- Three to four years of supervised work experience in engineering
- Pass the professional practice examination

## **EMPLOYMENT OPPORTUNITIES:**

- Aviation and aerospace firms that design, manufacture, repair, and overhaul aeronautical products, including complete aircraft, engines, components, and systems and sub-systems
- The Canadian Forces

There is considerable mobility among aerospace engineering specializations. Engineers often work in a multi-disciplinary environments, and acquire knowledge and skills through work experience that may allow them to practice in associated areas of science, engineering, sales, marketing, or management. Supervisory and senior positions in this group require experience.

## **JOB TITLES:**

- Aerospace Engineer
- Chemical Engineer
- Computer Engineer
- Electrical and Electronics Engineer
- Industrial and Manufacturing Engineer
- Mechanical Engineer
- Metallurgical and Materials Engineer
- Petroleum Engineer
- Supply Chain Engineer

# AVIATION ELECTRICAL/ ELECTRONIC/INSTRUMENT COMPONENT TECHNICIAN

Nothing gets more technologically advanced than this occupation. Starting with basic knowledge of electronic industry standards, connectors, fittings, crimping and soldering, these technicians move on to work on the most complex systems in aviation and aerospace. Electrical/Electronic/Instrument Component Technicians install, maintain, overhaul and test electrically powered equipment and systems. At ease with circuitry diagrams, precision testing equipment, components and wiring, these technicians work with patience, determination and attention to detail. They develop expertise in warning systems, flight recorders, heating and cooling systems, digital communications instruments, flight-control panels and computers, generators, alternators, actuators, servos, motors, pumps and voltage regulators.

On the aircraft or in the hangar, Electrical/Electronic/Instrument Component Technicians work with integrated lighting systems, air conditioning, cabin pressurization and GPS navigation systems, on-board training or tracking systems, fire/smoke sensors, RADAR, and the most sophisticated communication and broadcast technology available. In a shop environment they may perform inspection, troubleshooting, and repair of components such as clocks, radio equipment, flight control instruments, and collision avoidance system components. They are also responsible for ensuring quality control and quality assurance, and perform in-process and final inspections. This is a high-tech career with constant challenges and limitless possibilities.





Photo Courtesy of Brian Losito, Air Canada

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of a Aircraft Maintenance or Avionics program at a college or approved training organization (required)
- Training in electrical/electronic systems, bench testing, software fault detection, and digital instruments (required)
- In-house training (may be available)
- Type-specific repair procedures (acquired on-the-job)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- Strong work ethic
- Excellent communication skills
- Troubleshooting skills
- Attention to detail, patience
- Ability to collaborate and cooperate with others & meet deadlines

## EMPLOYMENT OPPORTUNITIES:

- Large and Medium-Sized Air Carriers
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- The Canadian Forces
- Research and Testing Facilities
- Aerospace Organizations
- Specialized Shops

## JOB TITLES:

- Aircraft Electrical/Electronic/Instrument Component Shop Technician
- Aircraft Avionics Technician or Mechanic or Specialist
- Aviation Instrument Technician
- Certified Avionics Technician
- Electrical Components Technician
- Electronics Technologist
- Electrical and Electronics Quality Control Technologist
- Quality Assurance Inspector



Photo Courtesy of David McGrath, Vector Aerospace

# AVIATION MACHINIST

Aviation machinists work individually or in teams to fabricate, repair, rework, or modify aircraft parts, components, and specialized tooling. They manufacture parts and components (tolling/jigs) that are used to build, modify, or repair an aircraft. Considered to be top authorities in the field, Aviation Machinists are almost always consulted in the design phase of any aviation project because of their extensive knowledge of materials, processes, and fabrication techniques. Their work is accomplished through the use of complex machinery to achieve precision. The growing complexity and expense of the parts and machinery, the stringent safety requirements, and the interaction required by machinists and their teams mean that good communication, dexterity, and computer skills are essential to this occupation.

Aviation machinists are required to be familiar with the rare and specialized materials used in the aviation industry — they work extensively with aluminum alloys, titanium, stainless and specialty steels, as well as with coating techniques such as plating and metalizing. While the theory and practical application of metal removal techniques may remain the same, machinery and cutting tool technology is rapidly evolving, meaning that machinists must keep up-to-date with the latest innovations and advances. Aviation Machinists are competent in reading engineering drawings, and in developing and executing the steps required to work on parts or components. They perform sawing, drilling machine operations, lathe operations, milling, jig and horizontal boring, and grinding, working on Electrical Discharge Machines (EDMs), and with Computerized Numerical Control (CNC) machining. Aviation Machinist is an essential member of the team in propulsion and hydraulic shops.



### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Machinist or Machinist program at a college or approved training organization (preferred)
- After successfully passing the inter-provincial exam, a machinist may take additional courses to become a Computer Numerical Controlled Equipment (CNC) machinist
- CCAA certification (an asset)

### **OTHER REQUIREMENTS:**

- High level of manual dexterity and hand/eye coordination
- Able to read and interpret engineering drawings

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft and Component Manufacturers (Aerospace)
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- Research and Testing Facilities
- The Canadian Forces

### **JOB TITLES:**

- Engine Shop Technician
- Machining and Fitting
- Machinist



# AVIATION MAINTENANCE INSPECTOR

When something as big and complex as an aircraft is being built and maintained, and when people's lives depend on it working perfectly every time, there are countless checks, balances, and verifications that must be observed during the process. Aviation Maintenance Inspectors are qualified individuals who are charged by an Approved Maintenance Organization (AMO) to ensure that aeronautical products are fit and safe according to the standards set by the designer, operator and/or manufacturer of the product. They make sure that every single aircraft part, system, instrument, and engine meets all safety requirements, and that the aircraft is 100% airworthy as per employer, ISO and Transport Canada standards. They are





responsible for documentation, in-coming inspection, in-process inspection, rework/dispatch inspection, and final/dispatch inspection. They do their work in hangars, in shops, and outside in all weather conditions.

Aviation Maintenance Inspectors also supervise the work of the mechanics and technicians, and check overall airline maintenance practices and inventory. The inspector can be responsible for verifying all systems, or just one particular type: bay inspections, strip inspections, electrical, mechanical and instrument inspections are just a few examples of the specializations available. Since the inspector carries all responsibility of an aircraft's airworthiness, the best of them are unaffected by pressure. They are the final assessor who ensures that everything is safe and "good to go." If you have a sixth sense for the tiniest details, possess strong communication skills, and can handle high-pressure situations, then this vital career is tailor-made for you.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Aviation Maintenance Engineer (AME) licence (required)
- Aircraft Maintenance and Inspection Certificate specific to employer's aircraft (required)
- Supervisor experience (often required)
- CCAA certification (an asset)

### **OTHER REQUIREMENTS:**

- At ease with heights
- Strong communication skills
- Eye for detail

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Manufacturing Organizations
- The Canadian Forces

### **JOB TITLES:**

- Aircraft/Avionics Electrical Inspector (AME-E)
- Aircraft Inspector
- Aircraft Mechanical Inspector (AME-M)
- Aircraft Structures Inspector (AME-S)
- Component Inspector
- Incoming Inspector

# AVIATION MAINTENANCE MANAGER

After serving a number of years as an Aircraft Technician (or an Aircraft Maintenance Engineer), the next step is to enter a management role, to be responsible for leading a group of skilled technical people who maintain aircraft to the highest industry standards. Though you are leaving a “hands-on” technical position, Maintenance Manager is anything but a desk job. Besides overseeing the people performing the work, the Maintenance Manager oversees the entire process of preparing an aircraft, ensuring proper procedures and meeting deadlines. Engine ground running, taxiing aircraft to the ramp for departure, undercarriage swings/testing, meeting deadlines and dealing with time pressure, unexpected engine changes — these may be all in a day’s work.

Leadership and the ability to “think fast on your feet” are essential to this position, as is being able to foster good morale, discipline, and productivity within your team of technicians and operators. A Maintenance Manager is not only a master of technical skills but also an expert in people skills. When you say “yes” to this job, a complex, constantly evolving, challenging world awaits you. If you are a natural leader with keen interpersonal and technical skills, then the role of Maintenance Manager is what you want to aim for.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Experience as an Aircraft Maintenance Technician or licensed AME, depending on company policy (required)
- Completion of Aviation Manager Course (an asset)
- In-house specific aircraft endorsement or training (may be required)
- CCAA Certification (an asset)



### **OTHER REQUIREMENTS:**

- Extensive knowledge of safety requirements and legislation, rules and regulations
- Leadership skills
- Meeting deadlines and dealing with time pressure
- Strong mathematical skills
- Managerial and inventory experience

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturing Companies
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- Research and Testing Facilities
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Maintenance Crew Chief (Line or Heavy)
- Aircraft Maintenance Team Leader
- Cell Leader
- Director of Maintenance (DOM)
- Maintenance Control Coordinator
- Person Responsible for Maintenance (PRM)
- Shift Manager, Maintenance Control

# AVIATION MECHANICAL COMPONENT TECHNICIAN

Aviation Mechanical Component Technicians are experts who work in the overhaul, repair, modification, inspection, testing, and certification of aviation components of pneumatic, hydraulic, fuel, electrical, environmental, and mechanical aircraft systems. System components include the aircraft landing gear, wheels, brakes and tires, as well as life preservers, rubber rafts and oxygen masks. They are involved in the set-up and operation of tools and equipment and some semi-automatic processes, and must maintain an accurate record system of work completed.

Aviation Mechanical Component Technicians have a solid understanding of mechanical systems, and are able to interpret technical manuals, blueprints, and electrical schematics effortlessly. With the increasing use of electrical/electronic interfaces in the industry, they must possess advanced knowledge in electronics and electrical systems. Computers are as much a tool of the trade as electrical test equipment. A thorough command of all safety regulations is mandatory when it comes to this position. In order to master this challenging career, Mechanical Component Technicians must be result-driven, detail-oriented, and able to work efficiently under the pressures of daily deadlines and multiple priorities.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Mechanical Component Technician or Aircraft Maintenance Technician program at a college or approved training organization (required)
- CCAA Certification (an asset)

## OTHER REQUIREMENTS:

- Strong interest and understanding of mechanical systems and ability to interpret technical manuals and drawings, blueprints, and electrical schematics
- Problem-solving skills, result-driven, detail oriented
- Thorough knowledge of electronics and electrical systems

## EMPLOYMENT OPPORTUNITIES:

- Aerospace Organizations
- Aircraft Operators
- The Canadian Forces
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)

## JOB TITLES:

- Aviation Mechanical Component Shop Technician
- Component Overhaul Technician
- Mechanical Component Technician



# AVIATION NON-DESTRUCTIVE INSPECTION TECHNICIAN

Aviation Non-Destructive Inspection (NDI) Technicians perform extremely detailed inspections of aircraft structures, engines, and components to determine structural integrity by revealing flaws not visible to the human eye.

NDI Technicians may not certify the airworthiness of aircraft, but they are responsible for certifying the serviceability of tested parts under the Approved Maintenance Organization (AMO) authority, and for documenting



Photo courtesy of Cougar NDE Ltd.

the inspections performed. Nondestructive testing methods include radiography (x-ray and gamma ray technology), magnetic particle technology, ultrasound, liquid penetrant, Eddy current testing, leak testing, visual examination, and more specialized methods like acoustic emission, microwave, laser, liquid crystal, holography, infrared-thermal, computed tomography, and neutron radiography.

Experience with complex composite materials and exotic metals is quickly becoming a requirement. Aviation Non-Destructive Inspection Technicians may be involved in any number of tasks and responsibilities, including research, design, manufacturing and maintenance.

Aviation Non-Destructive Inspection Technicians also participate in the development of inspection techniques and procedures for particular work scopes. They perform specific inspections of aircraft structures, engines and components to determine serviceability in accordance with applicable codes, specifications and standards.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Specialty training courses in each of the Non-Destructive Inspection Methods (required)
- Canadian General Standards Board (CGSB) certification, NAS 410 certification or ATA 105 certification (may be required)
- Individual method exams and safety courses based on company's requirements (may be required)
- CCAA certification (an asset)

### **OTHER REQUIREMENTS:**

- Thorough knowledge of safe work practices, rules and regulations and quality control/assurance
- Knowledge of material/metal forming processes (an asset)
- Excellent attention to detail
- Code and Specification interpretation (mandatory)
- Strong mathematical skills
- Strong interest in technical systems, manufacturing, processes or maintenance
- Driver's licence an asset due to amount of travel required in some organizations
- At ease with heights as some work may be done on aircraft





Photo courtesy of Cougar NDE Ltd.

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Manufacturers and Aerospace Facilities
- Aircraft Operators
- NDI Organizations
- Research and Testing Facilities
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Non-Destructive Inspection Technician
- Aircraft Non-Destructive Technician
- Aircraft Non-Destructive Technician Operator
- Aircraft Non-Destructive Testing Technician
- Non-Destructive Inspection Technician
- Non-Destructive Testing Technician

# AVIATION PAINTER

Aviation Painters perform all aircraft paintwork. Aircraft skin, propellers, instruments, engines, you name it — if it needs painting, it's the Aviation Painter's job. This highly skilled trade involves set-up and operation of tools and equipment, stripping, cleaning, masking of the aircraft and components, as well as selecting and mixing paints and using sophisticated automated painting equipment. Understanding and following all safety regulations is crucial to the job — an Aviation Painter's work includes the use of hazardous chemicals and potentially dangerous industrial spray-paint equipment. This is NOT standard painting job by any means: Aviation Painters are master craftspeople who know advanced coating application techniques and technologies and are well-versed in the full range of products, such



as those that prevent interference with radar reception and static charges to those with enhanced electroconductivity and aluminum-filled organic coatings that can withstand 450 degrees Fahrenheit (232°C) operating temperatures. Aviation Painters also perform the Quality Inspection of completed painting.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Painting program at a college or approved training organization (an asset)
- On-the-job training (may be available)
- CCAA certification (an asset)

### **OTHER REQUIREMENTS:**

- Good physical condition (work involves heavy lifting and climbing)
- Knowledge of and experience with hazardous materials (HazMats)
- Strong digital electronics skills and systems knowledge
- At ease with heights as work can be up on aircraft wings and fuselage

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Organizations
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Manufacturers
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Detailer
- Aircraft Painter
- Entry Level Prep Person

# AVIATION SPECIAL PROCESSES TECHNICIAN

The Aviation Special Processes Technician requires in-depth knowledge of chemistry, and a keen sense of observation and judgement. They must adhere to the critically important safety principles that apply to their work. They perform complex functions such as heat-treating, anodizing, plasma coating, special coatings and working with composite materials.

Being an Aviation Special Processes Technician requires discipline and precision while treating all types and shapes of aircraft parts. They manufacture and perform maintenance on reinforced plastic products using resins, monomer and polymer, reinforcements, fillers and additives. They operate and service blasting equipment and perform cleaning of aircraft engine parts and equipment.



Aviation Special Processes Technicians may work in a hangar, directly on the aircraft, on the ramp, on the flightline, at a workbench, or in a lab. They clean and strip parts made from unusual materials using chemical, electrical, and mechanical means. Once the parts are clean, they employ surface treatments such as conversion coatings, deposition, plating, thermal spray, diffusion coatings, or etching. After that, they toughen the parts using shot, glass, and flap-peening processes. The next steps are heat-treating, stress relief, and furnace brazing. All of these procedures strengthen the parts, ensuring that they will be reliable and able to endure the toughest stresses, ensuring that the aircraft can fly safely for several years. For example, landing gear materials must withstand repeated high-energy pounding and are so internally stressed that they need to be specially coated with high tech, complex paint compounds to guard against hydrogen embrittlement during high altitude flying conditions.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Aviation Maintenance program at a college or approved training organization (strongly recommended)
- Experience as an Aviation Machinist or Aviation Maintenance Technician (an asset)
- Non-aerospace specific education or training for some industrial products and processes (may be required)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- Thorough knowledge of the principles of chemistry
- Keen sense of observation and judgment
- At ease with heights as some work may be done on aircraft

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturers
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Research and Testing Facilities
- The Canadian Forces

### **JOB TITLES:**

- Aviation Plating Specialist
- Heat Treating Operator
- Plastics Technologist
- Process/Production Design

# AVIATION TOOL ROOM CONTROLLER

An Aviation Tool Room Controller is responsible for issuing tools and ensuring that they are maintained in proper condition at all times. The Tool Room Controller also looks after the calibration of tools and records the expiry dates and servicing dates of specialty tools. He or she documents the issuing and return of each tool as it exits or enters the tool room. Once a tool is returned, the Tool Room Controller assesses the condition of the tool and determines whether it needs to be replaced.



Tool array for the Bell Helicopter series of Dynamic Components in the Helitrades component assembly room. Photo courtesy of Helitrades Inc., Vankleek Hill, ON.



Photo courtesy of Transport Canada.

### **CAREER PATHWAY:**

- Completion of secondary school (required)
- On-the-job training (may be available)
- Workplace Hazardous Materials Information System (WHMIS) (required)

### **OTHER REQUIREMENTS:**

- Good reading, writing and comprehension skills
- Computer and telephone skills are required
- Good communication and people skills
- Three-to-six month ramp-up of knowledge
- Ability to pay attention to detail
- Proficient understanding of tools

### **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Supply Chain Management
- The Canadian Forces

### **JOB TITLES:**

- Aircraft Tool Room Controller
- Aircraft Tool Room Issuer
- Stock Keeper
- Tool Crib Worker



# AVIATION WELDING TECHNICIAN

An aviation welder is a highly skilled journey-level welder, specifically trained to work with aircraft structures and special materials using tungsten inert gas (TIG) and metal inert gas (MIG) techniques, as well as laser and plasma welding. Aviation Welding Technicians also work with alloys of nickel, aluminum, titanium, cobalt, stainless steel and carbon steel. They perform electric arc processes, resistance welding, and Oxy-Fuel/Oxyacetylene set-up, cutting, welding and brazing procedures.

Theoretical knowledge of metallurgy and aircraft structures is a necessity, as is an ability to read and interpret complex blueprints and technical drawings.

New technologies involving laser equipment and new materials are increasingly being used in aircraft repair. Therefore, future welding technicians will also be required to have skills in joining exotic materials, and knowledge of new welding techniques, such as friction stir welding and laser welding. New technologies such as pulse TIG/MIG machines require very specific skills.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of a Structured Welding or Aviation/Aerospace Welding program at a college or approved training organization (an asset)
- Provincial or inter-provincial welding certification (an asset)
- Experience and current qualifications in TIG welding of steel and aluminum (required)
- CCAA certification (an asset)

## OTHER REQUIREMENTS:

- A high level of dexterity and hand-eye coordination

## EMPLOYMENT OPPORTUNITIES:

- Aerospace Organizations
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- The Canadian Forces

## JOB TITLES:

- Aircraft Welder
- Aviation Welder
- Aviation Welding Technician
- Welder-Fitter



# AVIONICS MAINTENANCE TECHNICIAN

Avionics involves working with complex electronic and electrical systems, including navigation, guidance, communications, surveillance, and flight control. This profession is essential to the safe and timely operation of all aircraft on the ground and in the air. Up-to-date knowledge of avionics opens the door to many employment opportunities in the aviation and aerospace industry. Avionics Maintenance Technicians are masters of aircraft microprocessor technology, front-line tests, calibrations, repairs, and maintenance on state-of-the-art systems, including fly-by-wire guidance, auto flight systems, global positioning systems, radio navigation equipment, and satellite navigation systems.





Avionics Maintenance takes place both in the shop (bench repair) and in the hangar (aircraft repair), and on both rotary- and fixed-wing aircraft. Shop work includes the repair and certification of aircraft electrical, electronic, and instrumentation components; on-aircraft work includes the testing, trouble-shooting, repair, removal, and installation of aircraft electrical, electronic, and instrumentation systems. Work may be done in test cells, in dust-free “clean rooms”, on the bench or in the laboratory, or directly on aircraft in the hangar, on the ramp, and in the flight-line.

Fascinated with sophisticated electronics systems, a good Avionics Maintenance Technician is an excellent team player with solid communication skills and a tireless commitment to safety and excellence. This is one of the most demanding trades in aviation.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an Avionics Maintenance Technology program at a college or approved training organization
- Aircraft Maintenance Engineering Licence, Category “E” (AME-E) (an asset)
- After 48 months of experience as an AMT, can apply to Transport Canada to write the regulatory exam for a category “E” licence to become an AME with specialization in Avionics (AME-E)
- CCAA certification (an asset)

## **OTHER REQUIREMENTS:**

- Ability to be solely responsible for a particular project
- Ability to work in the close, cramped environment surrounding electronic instrumentation in aircraft
- Strong mathematical skills
- Ability to complete records of work done and sustain an accurate record system
- Ability to interpret blueprints and written technical instructions

## **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Operators
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Avionics/Electronics Shops
- Bench Repair Shops
- Ground-Based Communications and Navigation Organizations
- Manufacturers
- The Canadian Forces

## **JOB TITLES:**

- Aircraft Avionics Technician
- Avionics Mechanics
- Avionics Technician
- Electronics Technician

# COMPOSITE FABRICATOR

The Composite Fabricator has become an increasingly important occupation in the construction, maintenance, and repair of modern aircraft of all sizes, shapes, and purposes. Composite fabricators require a solid knowledge of, and experience in, chemistry and the composition of state-of-the-art composite materials such as Aramid fiber, carbon fiber, boron fiber, and the many forms of glass fiber. Understanding the chemical properties and handling procedures for the resin-matrix systems that are combined with these fibers is essential base knowledge. The ability to interpret blueprints and official documentation is also a vital skill. Vacuum tables, autoclaves, and specially designed, dust-free “clean rooms” are the primary tools and workplaces.



Composite Fabricators are involved in the manufacture, modification, repair, and inspection of aircraft composite structures and are required to store, handle, process and cure composite materials. They follow specialized procedures that require the hands-on set-up and operation of advanced tools and equipment, while also using semi-automated processes. More experienced composite fabricators may engage in non-destructive inspections of composite structures to determine the extent of damage to, and integrity of, aircraft composite structures.

This occupation requires people with exacting skills in, and extensive knowledge of, the repairable and non-repairable criteria for damaged composite structures, organic resin composition, product shelf life and lamination procedures. For instance, advanced epoxy pre-preg materials are stored frozen to ensure serviceability when needed. Because of the hazardous and toxic nature of the materials used, composite fabricators are highly trained to understand and respect the required environmental, and health and safety procedures.

### **CAREER PATHWAY:**

- Completion of secondary school, with science and technical credits (required)
- Accredited training at an institute specializing in the instruction of Advanced Composite Aircraft Structural Manufacturing and Repair (preferred)
- Completion of an Aviation Maintenance or Structures program at a community college (an asset)
- Experience as an Aviation Maintenance Engineer (AME-S) (an asset)
- CCAA certification (an asset)



## **OTHER REQUIREMENTS:**

- Thorough knowledge of safe work practices, environmental safety and regulations applicable to the handling of composite materials
- Knowledge of the physical and chemical properties of state-of-the-art compounds
- Knowledge of, and skills background in, working with power tools of all types
- Ability to work with others cooperatively and follow directions precisely

## **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturing Companies
- Aircraft Maintenance, Repair and Overhaul Organizations (MROs)
- Aircraft Operators
- The Canadian forces

## **JOB TITLES:**

- Composite Fabricator
- Inspector – Composites Structures
- Structures Manufacturing Specialist
- Structures Repair Specialist

# ELECTRICAL/ ELECTRONIC ASSEMBLER

Adept at electrical and electronics engineering, the Electrical/Electronics Assembler essentially constructs and wires together a fully functional brain and nerve system for aircraft, all to be safely controlled and monitored in the cockpit by the pilot. Reading and drafting complex schematics, diagrams, wiring specs, and electronic/data bus protocols are second nature to the Assembler, who must always keep up with the most current developments, inventions, and improvements in this constantly evolving field.

An Electrical/Electronics Assembler builds, installs, tests, and repairs electrical and electronic components and materials, such as wiring harnesses; locate, track, and troubleshoot vital service systems like taxi/landing lights and Black Boxes. Some of the essential systems include the autopilot system, VHF radio, Global Positioning Systems (GPS), SD/IDG electrical power units, battery buses, air/ground switch-over circuits, fuel management systems, fire protection and warning systems, AC-DC conversion and management units, circuits, anti-ice systems, as well as engine and ignition systems, just to name a few.

Assemblers require skills in systems integration. Assemblers may also be required to operate machinery to make or assemble parts and products, to assemble parts by hand, to set up equipment, and to perform minor repairs to items rejected from the production line. The Electrical/Electronic Assembler is involved in the set-up and operation of tools and equipment as well as some semi-automatic processes.

Electrical/Electronics Assemblers are the lynchpin of aircraft functionality; in this digital and wire age; you simply cannot build a safe aircraft without them.

## CAREER PATHWAY:

- Completion of Secondary School (required)
- Completion of a Basic Electronic Theory and Techniques program from a college or approved training organization (may be required for some positions)



- Training and/or experience in Aviation Maintenance (an asset)
- In-house training for specialist skills (may be available)
- On the job training (may be available)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- A high level of manual dexterity
- Must be able to work with others cooperatively and follow directives precisely

### **EMPLOYMENT OPPORTUNITIES:**

- Large Aerospace Organizations
- The Canadian Forces
- Work in a shop or assembly line

### **JOB TITLES:**

- Electrical Harness assembler
- Electronic/Mechanical assembler
- Equipment Rack assembler
- Navigation/Radar assembler

# GROUND SERVICES ATTENDANT

Airport terminal grounds are the workplace of the Aviation Ground Services Attendant. The people who service aircraft fill many roles that require specialized training. Many different types of motorized equipment are used to service an aircraft, from pallet loaders, potable water trucks, mobile conveyor belts, tugs for pulling baggage cart trains to high-speed aircraft tow tractors. Ground Services Attendants are the ones who load and unload aircraft materials, and who are responsible for positioning the baggage/cargo correctly to stay within the operating weight and balance limits of the aircraft (an unbalanced aircraft is an unsafe aircraft), while working with stringent time constraints in a high-noise environment with jet blast hazards.

Ground Services Attendants load and unload payloads; operate ground equipment such as belt loaders, push trucks, tractors, ground power units, and air start equipment; load specialized goods and equipment; reposition and move aircraft; and connect and operate passenger loading equipment. They also perform de-icing procedures. The Lead Attendant is responsible for the final preflight security inspection, and commands the push-back crew.

The ability to operate in all weather conditions and good physical conditioning are assets in this demanding occupation. The Ground Services Attendant occupation is often the point of entry for other positions, especially in large organizations, with the possibility of promotion to Lead or Cargo Loadmaster, for example. Ground Service Attendants can also rise to management positions, overseeing people/teams, terminal control, and gate assignments.



### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- In-house training in Aviation General Practices and specialized courses (provided by company)
- Training and experience as a Heavy Equipment Operator (required – may be obtained in-house)
- Safety training (required)
- Firefighting proficiency, airside security (may be obtained in-house)
- CCAA Certification (an asset)

### **OTHER REQUIREMENTS:**

- Excellent people skills, ability to remain calm in stressful situations
- Good physical condition
- Environmental awareness, and hazardous materials (HazMat) knowledge
- Valid driver's licence

## EMPLOYMENT OPPORTUNITIES:

- Airport Ground Operations
- The Canadian Forces

## JOB TITLES:

- Airport Ramp Attendant
- Baggage Handler
- Baggage, Cargo, Weight and Balance Controllers
- Cargo Attendant
- Commissary Attendant
- De-Icer
- Lead Station Attendant
- Materials Handler
- Ramp Service Attendant
- Ramp Station Attendant



# HELICOPTER DYNAMIC COMPONENTS OVERHAUL TECHNICIAN

Helicopter Dynamic Component Technicians specialize in the overhaul of “dynamic” helicopter components — essentially, those moving and shifting components that are essential to the rotation of helicopter blades and allow the pilot to control the direction of the aircraft. Using the standard principles of hand tools, aircraft standard practices and regulations, these technicians work on complex components like gearboxes and rotor heads. Definitely a job for experienced technicians, if you’re interested in the mechanics behind helicopter guidance, then this is the career path for you.

## **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Completion of an accredited Aviation Maintenance Program at a college of approved training organization (required)
- AME Licence (usually required)
- On-the-job training beyond the time required to secure an AME-M Licence (required)
- Transport Canada AME “P43” (an asset)

## **OTHER REQUIREMENTS:**

- At ease with heights

## **EMPLOYMENT OPPORTUNITIES:**

- Aircraft Operators
- Helicopter Repair Facilities
- The Canadian Forces



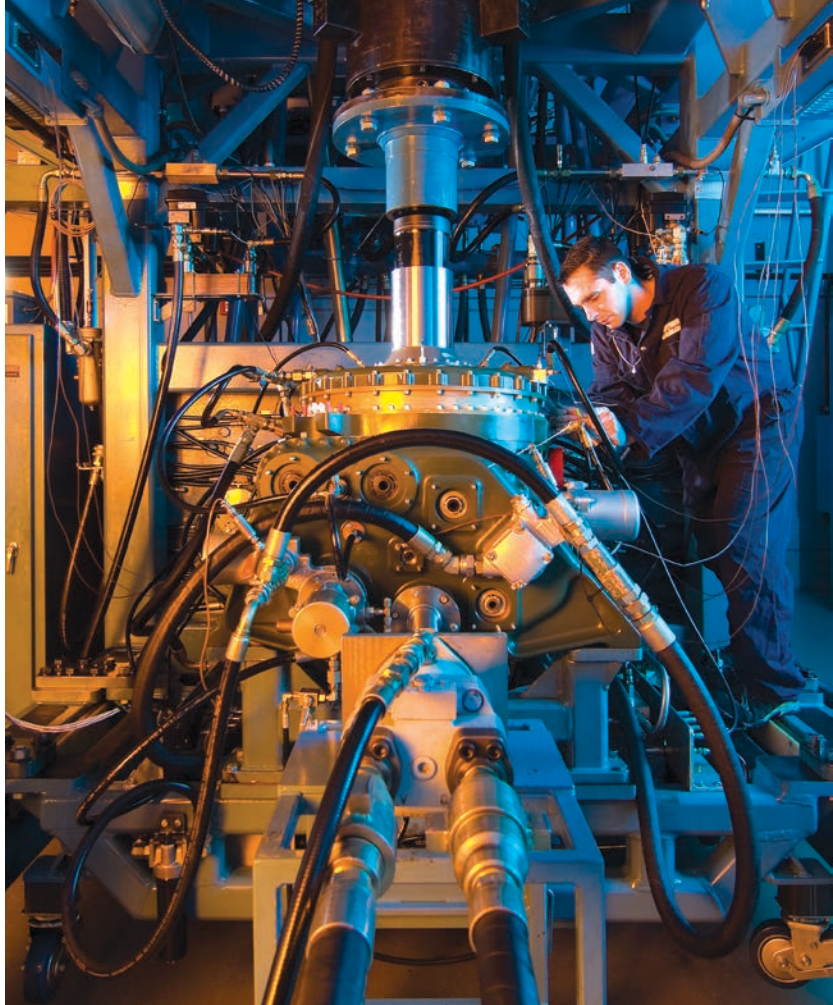


Photo Courtesy of David McGrath, Vector Aerospace Heli-Services

### **JOB TITLES:**

- Dynamic Component Technician
- Helicopter Components Technician

If you have a passion for airplanes or helicopters and enjoy a challenge, consider becoming a Commercial Pilot. This is a very rewarding career where you can see the world from a vantage point that not many others get to experience. Becoming a pilot requires self-confidence, a keen mind, problem solving, a well-developed sense of responsibility and a desire to continue learning.

Pilots are responsible for operating fixed-wing or rotary aircraft safely and in accordance with current rules and regulations and also for ensuring the safety of every individual on board. There are many different kinds of pilots but they all have the same basic goals: to complete the job safely, be as economical as possible and to depart and arrive on time. Some of the different types of pilots include:

- Airline Pilot: A two-crew (or more) environment; regional, national and international flying; short or very long distances; small to very large aircraft
- Charter Pilot: A one or two-crew environment, flying medium-sized planes and either carrying people or hauling cargo
- Helicopter Pilot: A one or two-crew environment, often doing survey or medevac work
- Bush Pilot: A one or two-crew environment, flying small planes on wheels or floats and either carrying people or hauling cargo
- Air Ambulance Pilot: A one or two-crew environment; fixed or rotary wing; often flying in challenging situations and locales
- Air Taxi Pilot: A one or two-crew environment, flying medium-sized planes and carrying people
- Corporate Pilot: A one or two-crew environment, flying medium-sized planes and carrying people
- Instructor: A single pilot environment, teaching students on either a fixed-wing or rotary-wing aircraft
- Military Pilot: A one or two-crew environment, aircraft of all sizes; many functions: combat, transport, surveillance, medevac, etc.
- Test Pilot: A one or two-crew environment, aircraft of all sizes that are in the under development and in the final stages of prototyping



Pilots must have a thorough understanding of weather patterns and phenomena. There are certain types of weather that aircraft cannot fly through; because of these situations, the pilot must be able to read and understand weather information and make “Go/No-Go” decisions. An incorrect decision can be fatal. For this reason, pilots undergo copious amounts of weather training and are required to evaluate weather conditions before every flight.

Whether flying a fixed-wing or a rotary-wing aircraft, the pilot must be familiar with a specific aircraft’s performance. This means knowing and understanding how each system on the aircraft works and if a system goes offline, how that will affect the safe continuation of the flight. Some of the systems the pilot must understand are: pitot-static system, electrical system, vacuum system, hydraulic and pneumatic systems and the autopilot. Pilots must be competent to do pre-flight inspections of each system. Some of these systems incorporate cutting-edge technology and are continuously being upgraded; pilots must be able to adapt and learn quickly in order to remain current on the aircraft type.



Every airplane and helicopter has been evaluated to determine how much weight it is able to carry. Pilots are responsible for ensuring that their aircraft has been loaded properly, that all baggage or cargo is secure and that the aircraft is not overweight. An overweight aircraft is very dangerous because it will not respond to input nor perform as the pilot expects. In addition, fuel calculations factor in weight as well as distance, speed and weather conditions.

The training to become a pilot is very strict and challenging. Individuals must complete numerous written tests that cover a vast range of topics including: navigation, weather, air law, airmanship, instruments, operations, and others. The practical exams are inflight tests with a qualified examiner in which the pilot must demonstrate their ability to perform specified manoeuvres safely and within tolerances. Both of these types of examination require the pilot to complete a certain number of flying hours before they qualify for these exams. Once a pilot completes all basic training and begins their career, they are required to complete a proficiency test every six months to ensure they are still competent and capable of flying their aircraft. To ensure the physical fitness of operational pilots, annual medical testing is mandatory for pilots under the age of 40, and every 6 months for those over 40.

## **CAREER PATHWAY:**

- Involvement in Air Cadets or flight clubs (an asset)
- Completion of Secondary School (required)
- Completion of a post-secondary program (an asset)
- Completion of Private Pilot's licence, Commercial Pilot's licence, night rating, multi-engine rating, instrument rating, Airline Transportation Pilot's licence (required)
- Knowledge of Transport Canada's Canadian Aviation Regulations (required)
- Acquisition of flight hours appropriate to the desired position (required)

## **OTHER REQUIREMENTS:**

- Sound knowledge of aircraft systems, aerodynamics, aircraft structures and weather patterns and phenomena
- Strong communication skills in the English language
- Ability to exercise good judgement in stressful situations
- Ability to work well with crew members
- Ability to understand new concepts quickly

## **EMPLOYMENT OPPORTUNITIES:**

- Airline Captain or First Officer
- Bush Pilot
- Charter Pilot
- Medevac Pilot
- Search and Rescue Pilot
- Canadian Forces Pilot
- Dispatch/Air Traffic Control
- Flight Instructor

## **JOB TITLES:**

- Chief pilot
- Flight Engineer
- Captain
- First Officer
- Co-Pilot
- Pilot
- Chief Flying Instructor

# QUALITY ASSURANCE MANAGER

Safety, quality, and reliability are critical principles in the aviation and aerospace industry. Quality Management Systems enable continuous improvement of business processes and ensure compliance with organizational policy, regulations, processes and other requirements or standards. Quality Assurance Managers help accomplish these goals.

The Quality Assurance Manager ascertains the risk and establishes the standards that ensure an adequate safety margin is maintained. Quality Assurance Managers must have detailed knowledge of the roles and responsibilities of other quality assurance positions, such as Quality Systems Auditors. Quality Assurance Managers are familiar with the



technical requirements associated with their organization. They have extensive knowledge of industry requirements, standards, regulations and legislation.

The responsibilities of the Quality Assurance Manager include monitoring conformance and compliance to regulations, standards and policies. They must be able to develop plans, budgets, schedules, and to prioritize, as well as have strong communication skills and be able to supervise and mentor.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Technical Diploma or Degree (recommended)
- Experience in the Aviation and Aerospace Industry (required)
- CCAA Certification (as asset)
- National or International Certification (an asset)
- Management Training (recommended)
- Advanced Canadian Aviation Regulations training (an asset)
- Industry Audit Course such as the CCAA workshop (an asset)

### **EMPLOYMENT OPPORTUNITIES:**

- All Aviation Organizations

### **OTHER REQUIREMENTS:**

- Knowledge of aviation maintenance and manufacturing and other related processes



# QUALITY SYSTEMS AUDITOR

Safety, quality, and reliability are critical principles in the aviation and aerospace industry. Anything that goes wrong with a product or service can have serious consequences and severely damage a company's reputation. Quality Systems Auditors understand the importance of auditing as part of a Management System, and its value to enhancing an organization's operational performance and safety. The auditor is trained to assess the performance of the business thereby ensuring the effectiveness and compliance of business processes.





Photo Courtesy of Bernie Wurster

The responsibilities of Quality Systems Auditors include preparing, planning and conducting audits to determine process effectiveness and conformance with regulations, standards and policies. They need to know how to prioritize, schedule, budget, and allocate human and material resources. They need to be impartial, diligent, and concise, have an eye for detail, and maintain confidentiality.

### **CAREER PATHWAY:**

- Completion of Secondary School (required)
- Technical Diploma or Degree (recommended)
- Quality Auditor Training (required and available through CCAA)
- Experience in the Aviation and Aerospace Industry (required)
- National or International Certification (an asset)
- CCAA Certification (as asset)

### **OTHER REQUIREMENTS:**

- Knowledge of aviation maintenance and manufacturing and other related processes
- Technical writing skills
- A lead auditor will require additional training and experience

### **EMPLOYMENT OPPORTUNITIES:**

- All Aviation Organizations

# STRUCTURES ASSEMBLER

Can you picture yourself actually building modern, high-tech aircraft? This is a job that demands excellent hands-on skills, as well as the ability to read blueprints and to follow detailed engineering instructions accurately. The Structures Assembler performs wide variety of tasks, such as mating fuselage barrels/sections using fixed jigs, installing, fitting, and rigging wings and tail planes. The Structures Assembler is also involved in the repair, installation, modification and inspection of aircraft structural materials. Structures Assemblers assemble, fit and install aircraft skins, frames and structural parts. They assemble structures made of sheet metal and composites, and possess knowledge of assembly jigs and tools. The Structures Assembler is involved in the set-up and operation of tools and equipment as well as some semi-automatic processes.

The Structures Assembler is part of an expert team that installs sophisticated fasteners, rivets, sealing materials, and doublers around door openings. More experienced assemblers hang engine pylons and conduct full system-function checks of all the moving parts. Structures Assemblers put together all the individual pieces and parts to create the aircraft.

## CAREER PATHWAY:

- Completion of Secondary School (required)
- Completion of an Aircraft Structures or Aerospace Manufacturing program at a college or approved training organization (an asset)
- AutoCAD training (an asset)
- Training and experience as a Heavy Equipment Operator (an asset)
- CCAA Certification (an asset)



### **OTHER REQUIREMENTS:**

- Excellent hands-on skills and manual dexterity
- Ability to read blueprints and follow detailed engineering instructions accurately
- Ability to keep documentation of work completed

### **EMPLOYMENT OPPORTUNITIES:**

- Aerospace Manufacturing Facilities
- Specialized Shop or Factory Assembly Line
- The Canadian Forces

### **JOB TITLES:**

- Empennage Assembler
- Equipment Bay Assembler
- Journeyman Assembler
- Section Assembler
- Sheet Metal Assembler/Installer
- Wing Assembler

# OTHER OCCUPATIONS

Becoming an aviation technician or engineer is not the only way to work in the aviation and aerospace sector. You could become part of a flight crew, work inside or outside an airport and more. Here are some other career options to consider.

## **FLIGHT CREW:**

Flight Crews are the personnel who operate an aircraft while in flight. The makeup of the crew depends on the type of aircraft and the purpose of the flight: medevac services, search and rescue operations, airlines, charters, or specialty aerial operations.

- Flight engineers (second officers) monitor the functioning of aircraft during flight and may assist in flying aircraft.
- Flying instructors teach flying techniques and procedures to student and licensed pilots.
- Flight attendants ensure the safety and comfort of passengers and crew members during flights.

## **AIRPORT OCCUPATIONS:**

An airport has at least one surface for a plane to take off and land, such as a runway, a helipad, or water. Airports often include buildings such as control towers, hangars and terminal buildings, and larger airports may have fixed base operator services. Workers in airport operations, on the ground, or in the terminal can include:

### **Management/Administration Occupations:**

- Administration
- Business Development/Marketing
- Communications/Public Relations
- Regulatory



### **Airside Operations Occupations:**

- Snow Removal
- Runway Maintenance Electrical Maintenance
- Rescue & Fire
- Ground Traffic Control
- Wildlife Management

### **Terminal/Groundside Operations Occupations:**

- Building Maintenance
- Terminal Safety
- Operations Control
- Parking/Ground Transportation

### **AEROSPACE TECHNICIAN AND TECHNOLOGISTS:**

Aerospace Technicians and Technologists are an important part of the aerospace team and often work closely with scientists and engineers in support of their research, to manage projects, and to troubleshoot. They can work in a number of areas including process planning, drafting and design, quality assurance, and industrial engineering. Their skills can be used to operate wind tunnels, build models and construct test equipment. The career path of Aerospace Technicians and Technologists may lead to management positions.

## OTHER CAREER OPTIONS:

- Air Traffic Controllers
- Aircraft Sales
- Aviation Lawyer
- Aviation Management
- Aviation Security
- Flight Dispatcher
- Pattern Maker and Molder
- Supply Chain Manager
- Technical Records Specialist
- Transportation of Dangerous Goods Handler, Shipper or Program Administrator





# EDUCATION AND TRAINING

There are a wide variety of training programs, certifications, diplomas, and degrees that are specific to the aviation and aerospace industry including training for maintenance, manufacturing, flight, airport operations and engineering. Skills learned are often transferable from one occupation to another within the industry, and to other industries.

As course offerings change from semester to semester, please check with the school itself for course availability.

## TRAINING FOR MAINTENANCE AND MANUFACTURING

CCAA Accreditation is the recognition by CCAA that a training organization meets the developed standards for the delivery of a particular CCAA training program. CCAA Accreditation may apply to both training institutions and companies looking to accredit a training program. The Accreditation process ensures that a training institution or company meets or exceeds the standards in terms of content, administration, resources, faculty and facilities. Look for colleges and training organizations that offer such accreditation as proof that your training meets the national standard.





## **TYPES OF PROGRAMS RELATED TO MAINTENANCE AND MANUFACTURING:**

- Aerospace Manufacturing Engineering Technologist
- Aerospace Manufacturing Technician
- Aircraft Electrical Assembly
- Aircraft Gas Turbine Engine and Overhaul Technician
- Aircraft Interior Technician
- Aircraft Maintenance Technician
- Aircraft Mechanical Assembly
- Aircraft Structural Assembly
- Aircraft Structures Technician
- Aviation Machining
- Aviation Painter
- Aviation Welding Technician
- Avionics Maintenance Technician
- Composites Manufacturing
- Non-Destructive Inspection Technician
- Sheet Metal Technician

## **COLLEGES/TRAINING ORGANIZATIONS OFFERING MAINTENANCE AND MANUFACTURING PROGRAMS:**

### **West**

- British Columbia Institute of Technology, Aerospace Technology Campus, British Columbia
- Camosun College, British Columbia
- Neeginan Institute of Applied Technology, Manitoba
- North Island College, Campbell River Campus, British Columbia
- Northern Lights College, Dawson Creek Campus, British Columbia
- Okanagan College, British Columbia
- Red River College, Stevenson Campus, Manitoba
- Saskatchewan Indian Institute of Technologies, Saskatchewan
- Southern Alberta Institute of Technology, Alberta
- StandardAero, Manitoba
- University of the Fraser Valley, British Columbia



## Central

- Algonquin College, Ontario
- Canadore College, Ontario
- Centennial College, Ontario
- Confederation College, Ontario
- DND – Canadian Forces School of Aerospace Technology and Engineering (CFSATE), CFB Borden, Ontario
- École des métiers de l'aérospatiale de Montréal, Quebec
- École nationale d'aérotechnique du Collège Édouard-Montpetit, Quebec
- Fanshawe College, Ontario
- Mohawk College, Ontario
- Sault College, Ontario

## East

- College of the North Atlantic, Newfoundland
- Holland College, Aerospace and Industrial Technology Centre, Prince Edward Island
- New Brunswick Community College, New Brunswick
- Nova Scotia Community College, Nova Scotia

## APPRENTICESHIP PROGRAMS AVAILABLE:

Apprenticeship programs are administered by provincial and territorial departments responsible for education, labour, and training. For more information contact your local apprenticeship office and/or the Red Seal Program at [www.red-seal.ca](http://www.red-seal.ca).

Apprenticeship programs available for the Aviation and Aerospace industry are:

- Aircraft Maintenance Journeyperson Apprenticeship Program
- Electrician
- Gas Turbine Engine and Overhaul Technician
- Machinist
- Millwright
- Welder

## **TYPES OF PROGRAMS RELATED TO AVIATION MANAGEMENT, FLIGHT OR PILOT TRAINING, AND AIRPORT OPERATIONS:**

- Air Traffic Control
- Airline Management
- Airport Management
- Airport Operations
- Aviation Flight Management
- Aviation General Arts & Science
- Aviation Law
- Aviation Management
- Aviation Operations
- Aviation Safety
- Aviation Technology – Flight
- Commercial Aviation Management
- Commercial Pilot
- Flight Instruction
- Flight Ratings
- Government & Aviation
- Ground Schools
- Integrated Airline Transport Pilot Licence
- Meteorology
- Pilot Licence
- Professional Pilot
- Safety Management Systems

## **COLLEGES AND UNIVERSITIES OFFERING AVIATION MANAGEMENT, FLIGHT OR PILOT TRAINING, AND AIRPORT OPERATIONS PROGRAMS:**

Colleges and universities are often associated with their local Flying Clubs or Flight Training Units, where much of the flight training takes place. The following list notes a college or university, and its respective associated flight center. There are many more private, independent flight training units in Canada that are not associated to colleges or universities.



## West

- British Columbia Institute of Technology: Pacific Flying Club, Delta, British Columbia
- Canada Wings\*, Southport, Manitoba
- College of New Caledonia: Guardian Aerospace, Prince George, British Columbia
- Medicine Hat College: Super T Aviation, Medicine Hat, Alberta
- Okanagan College: Southern Interior Flight Center, Kelowna, British Columbia
- Red Deer College: Sky Wings, Penhold, Alberta
- Red River College & Providence College: Harv's Air, Steinbach & St. Andrews, Manitoba
- Red River College: Winnipeg Aviation, St. Andrews, Manitoba
- Saskatchewan Institute of Applied Science and Technology: Leading Edge Aviation Ltd., Yorkton, Mitchinson Flying Services, Saskatoon, Regina Flying Club/SAC College, Saskatchewan
- Selkirk College: West Kootenay, British Columbia
- University of the Fraser Valley: Coastal Pacific Aviation, Abbotsford, British Columbia
- University of Victoria: Victoria Flying Club, Sydney, British Columbia

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\* Canada Wings is a training collective composed of fixed wing and rotary wings flight schools such as Kelowna Flightcraft, Allied Wings, DND, Canadian Helicopters, Atlantis Systems International and Canadian Base Operators.

## Central

- Algonquin College: Ottawa Flying Club, Ottawa Aviation Services, Ottawa, Ontario
- Cargair Flight Academy, Dorval, Quebec
- Cambrian College: Discovery Air, Sudbury, Ontario
- Canadore College: North Bay, Ontario
- Centennial College: Durham Flight Center, Oshawa, Ontario
- Chicoutimi Collège: Centre Québécois De Formation Aéronautique, St. Honore and Dorval, Quebec
- Conestoga College: University of Waterloo, Waterloo/Wellington Flight Center, Breslau, Ontario
- Confederation College: Thunder Bay, Ontario
- First Nations Technology Institute: Tyendinaya Mohawk Territory, Ontario
- Georgian College: Flight Labs, Barrie, Ontario
- Lafleche College: Three Rivers, Nadeau Air, Quebec
- Sault College: Sault Aviation College, Sault Ste. Marie, Ontario
- Seneca College: North York, Ontario
- Toronto Airways Limited, Markham, Ontario
- Saint-Hubert Flying School, Dorval, Quebec
- St. Clair: College: Journey Air, Windsor, Ontario
- University of Western Ontario: Dan Management and Organizational Studies, Diamond Flight Centre, London, Ontario

## East

- Mount Allison University: Moncton Flight College, Dieppe, New Brunswick

## TYPES OF PROGRAMS RELATED TO ENGINEERING:

- Aerospace Engineering
- Electrical and Electronics Engineers
- Industrial and Manufacturing Engineers
- Mechanical Engineering



## UNIVERSITIES OFFERING AEROSPACE ENGINEERING PROGRAMS:

### West

- University of Manitoba, Manitoba

### Central

- Concordia University, Quebec
- École Polytechnique de Montréal, Quebec
- McGill University, Quebec
- Université de Sherbrooke, Quebec
- Université Laval, Quebec
- École de technologie supérieure (ETS), Quebec
- Université du Québec à Chicoutimi, Quebec
- Carleton University, Ontario
- Ryerson University, Ontario
- University of Toronto, Ontario
- University of Toronto Institute for Aerospace Studies, Ontario
- Queen's University, Ontario
- Royal Military College of Canada, Ontario
- University of Ottawa, Ontario
- University of Western Ontario, Ontario
- York University, Ontario


### East

- Université de Moncton, New Brunswick

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