

CAREER ZONE: AVIATION AND AEROSPACE

Helping High School Students Prepare for a Career in the Aviation and Aerospace Sector



Ministry of
Education

Cover photo: Courtesy of University of Fraser Valley

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THIS GUIDE

This guide provides general background on the British Columbian aviation and aerospace sector, followed by more specific information on the three primary aviation and aerospace sub-sectors.

It also includes sample bundles of high school and post-secondary courses and training that illustrate how high schools, post-secondary institutions, and industry partners and employers may work together to develop pathways individual students can follow to qualify for a career in the aviation and aerospace sector.

This guide is an *introduction* only to the job and career possibilities within this sector. More detailed information is available from a variety of general and sector-specific sources mentioned throughout this guide.

WHAT IS A CAREER ZONE?

A Career Zone is a group of courses, certifications and work opportunities that BC high schools can develop to help Grade 11 and 12 students get ready to pursue a career in a particular industry while meeting provincial graduation requirements.

By working within a Career Zone in high school, students have the opportunity to:

- select the courses that match their specific skills, interests and career goals
- complete the pre-requisites of the post-secondary certificate, diploma or degree program of their choice
- take dual credit courses for a career head start and gain valuable post-secondary experience
- obtain industry-recognized career-preparation certifications
- acquire work experience relevant to their career goals





WHAT'S INCLUDED IN A CAREER ZONE?

A Career Zone includes a broad range of core courses and career-specific electives, industry-recognized certifications and work experience intended to prepare students for the careers they want while they are still in high school.

Individual BC School Districts are encouraged to develop their own Career Zones based on local labour market needs, student interests, industry and post-secondary partnerships, and local work experience opportunities.

Career Zones should include:

- mathematics, language arts and science courses at the Grade 11 or Grade 12 level
- an applied skills elective at the Grade 11 or Grade 12 level
- where available, a variety of transition opportunities, including:
 - » dual credit courses
 - » Board/Authority Authorized (BAA) courses
 - » Independent Directed Studies
 - » Advanced Placement courses
 - » Work Experience 12A and 12B, as well as other workplace training opportunities, including co-op placements and summer internships
- industry-recognized career-preparation certifications, such as CPR, First Aid or Workplace Hazardous Materials Information System (WHMIS)

IS THERE ONLY ONE ROUTE WITHIN A CAREER ZONE?

Depending on their specific career goals, graduating students have a choice of four basic routes:

- apprenticeship route
- certificate or diploma route
- degree route
- direct-to-work route



INDUSTRY TRAINING AUTHORITY PROGRAMS

Youth [Train in trades \(TRN\)](#) allows high school students to take first level (classroom) technical training in a trade and receive credit for both high school and the apprenticeship. Technical training classes are most often taught at post-secondary institutions but can also be offered at school district facilities.

Youth [Work in trades \(WRK\)](#) lets students begin the work-based training component of an apprenticeship program while still in high school. Students “earn while they learn,” earning credits toward both their high school diploma and apprenticeship on-the-job training. WRK students complete up to 480 hours of work experience that counts toward their apprenticeship.

Apprenticeship Route

This route helps prepare students to apprentice in a trade as soon as they graduate.

An apprenticeship is a combination of:

- work-based training:
 - » 20% in school
 - » 80% on a work site, with an employer sponsor
- classroom learning at a college, institute, university or private trades training institution

All apprenticeship training is delivered by skilled, certified trades people with experience in the field.

In BC, successful apprenticeship training leads to a Certificate of Qualification (CoQ) awarded by the **INDUSTRY TRAINING AUTHORITY**, which is recognized across the province. About 50 trades also offer the Interprovincial (IP) Red Seal certificate, which is recognized across Canada.



Certificate or Diploma Route

The certificate or diploma route helps prepare students who have decided to pursue a career that requires fairly extensive additional training after high school graduation. This training requires a minimum of 13 weeks and usually one to two years, depending on the structure of the program and the institution.

Many certificate or diploma programs in BC allow students to move into an advanced-level degree program in the same subject area.



Degree Route

The degree route helps prepare students for a career that requires a four or five year degree from a post-secondary institution.

Some degree programs begin in one institution and are completed at another.

Direct-to-Work Route

Graduates who have the right preparation in high school have many direct-to-work job opportunities the Aviation and Aerospace sector. These jobs require only on-the-job training and the appropriate industry-recognized career-preparation certifications. Students may be able to acquire these certifications while still in school or within a very short time after graduation.

Some jobs may require additional certificates that take a little longer to complete.

The direct-to-work route includes an option to enter the workforce immediately upon graduation or after a short certificate program taking 12 weeks or less.

IS IT POSSIBLE TO CHANGE A ROUTE?

It is always possible to change a route.

A Career Zone provides students with a solid foundation of core courses, electives, career-preparation certificates and work experience relevant to a particular industry—in this case, the aviation and aerospace sector—that can be adapted to different routes as required.

NOT ALL INDUSTRY JOBS ARE IN THE FIELD

In addition to skilled and experienced people who work in the field or on the front lines, every industry needs people who work in the office, in such areas as IT, accounting, health and safety, human resources, investor or customer relations, communications, etc. While general certificates and degrees are available in these fields, it can help to have relevant courses, certifications and work experience within the industry sector.

Every industry also needs leaders: business managers, supervisors, executives. Many people occupying leadership roles start by first gaining relevant work experience then adding further on-the-job training, additional certifications or advanced degrees.

For example, a student may start on the apprenticeship route, then realize, as he or she learns and experiences more, that the post-secondary certificate or degree route would be better. The student can then add the additional courses, career-preparation certificates or work experience needed for that route.

A Career Zone helps enable students to make changes later, when they are already in a training program or the workforce. With the broad based, career-focused foundation they receive in high school, they will find it easier to upgrade their qualifications later.

Students and their parents should be open to the possibility that an inspiring course or a stimulating work experience may lead them to change their original career path.



USEFUL CAREER PLANNING RESOURCES

- **WORKBC** provides profiles of more than 500 different occupations, with details on job duties, education and training required, employment outlook and average salaries or wages. The site also offers a comprehensive database of BC job postings and a blog featuring trends, job-search tips and employment programs.
- **EDUCATIONPLANNERBC** allows users to compare BC post-secondary programs.
- **TRADES TRAINING BC** helps students and employers find trades programs offered at 14 post-secondary institutions throughout BC.
- **ITABC** works with employers, employees, industry, labour, training providers and government to issue credentials, manage apprenticeships, set program standards and increase opportunities in the trades.
- **DISCOVERSKILLSBC** includes information about apprenticeships and careers in technology and resources to help students discover which trades are a good match for them.

CAREER ZONE MAP

Like a transit map, the chart on the next page shows four possible routes from high school to a range of the most in-demand careers in the aviation and aerospace industry.

Career Zone Map: Aviation and Aerospace

This map shows the various routes high school students can take to achieve high-demand jobs in the aviation/aerospace sector.

Routes start from the centre, with core high school courses, followed by options that help prepare students for the next stops along the route of their choice.

At any point, students may decide to switch their direction of travel and try a different route.

Bold indicates a high-demand job (BC 2025 Labour Market Outlook)



Legend

* Medical Certificate Category 4

AVIATION AND AEROSPACE CAREERS



Canada is home to leading aviation and aerospace companies, and is a world leader in designing and building:

- regional aircraft
- avionics
- business jets
- commercial helicopters
- aircraft engines
- flight simulation systems
- landing gear, and
- space systems

Our companies also offer extensive aircraft maintenance, repair, and overhaul expertise to civil and military customers around the world. At the same time, leading aviation and aerospace companies from around the world come here to manufacture their products and pursue research and development projects.

The sector also includes:

- airports and all the activities that go on there, from runway maintenance, to baggage handling, and wildlife management
- aerial firefighting
- aerial surveying and mapping
- air navigation and traffic control
- aviation insurance

DEFINITIONS

For the purposes of this Guide, the aviation and aerospace sector includes:

- research, design, development, production, operation, and use of aircraft (**aviation**)
- research, design, and manufacture of aircraft, rockets, missiles, satellites, spacecraft, etc., that operate above the Earth's atmosphere (**aerospace**).

FOR MORE INFORMATION:

[BC Labour Market Outlook](#)

[Aerospace Canada](#)

[Aerospace Industries Association of Canada \(AIAC\)](#)

[AIAC Pacific](#)

[Air Transport Association of Canada](#)

[Canadian Space Agency](#)

[Innovation, Science and Economic Development Canada](#)



Canadian Aviation and Aerospace Facts and Figures

In June 2016, the Aerospace Industries Association of Canada (AIAC) and Innovation, Science and Economic Development Canada jointly released *State of Canada's Aerospace Industry: 2016 Report*, which contains extensive information on the Canadian aerospace industry as of 2016. For example:

- Canada ranks third in global civil aircraft production
- Canada's aviation and aerospace industry is a mix of civil/commercial, defence (military), and space systems activities
- space systems activities cut across both civil and defence markets
- the industry:
 - » contributed more than \$28 billion to Canada's GDP, and
 - » was responsible for providing 211,000 jobs
- more than 70% of the industry's activity is dedicated to manufacturing while the balance is focused on maintenance, repair, and overhaul
- aviation and aerospace manufacturing accounts for close to 30% of total manufacturing research and development investments in Canada



Image: Courtesy of UFV

British Columbia Aviation and Aerospace Facts and Figures

AIAC's Pacific branch reports that BC's aviation and aerospace industry:

- is made up of 170 companies, most of them small and medium-sized enterprises
- generates annual revenues of \$2.4 billion and direct GDP of \$1.3 billion
- employs 8,300 British Columbians directly, and supports another 14,300 to 19,800 jobs indirectly
- includes original equipment manufacturers in the aircraft sector (**Viking Air**) and space sectors (**MDA**)

In addition, BC's aviation and aerospace sector has nation-leading capabilities in:

- space and remote sensing
- in-service support and maintenance, repair, and overhaul
- aviation training and simulation
- special mission aircraft
- advanced manufacturing

VIKING AIR

Located near Victoria International Airport, Viking Air provides a complete range of services for the de Havilland 7 aircraft, including spares support, engineering services, and MRO and conversions. In April 2007, Viking also began production of the all-new DHC-6 Series 400 Twin Otter. In addition, the company manufactures parts for Boeing, Bell Helicopter Textron, Lockheed Martin, and Bombardier Aerospace.

MDA CORPORATION

MDA designed and built the **Canadarm** used on the **NASA Space Shuttle**, as well as the **Canadarm2** and **Dextre** remote manipulator systems used on the **International Space Station**.

MDA's other products include satellite ground stations, aviation information systems, communications satellites, airborne surveillance systems, and space robotics and payload systems.





RECOMMENDED CORE COURSES AND ELECTIVES FOR CAREERS IN THE AVIATION AND AEROSPACE SECTOR

It is vital that students investigate the core courses and electives that will help them take the most direct route to the career they want in the aviation and aerospace sector.

Core Courses

All BC high school students are required to take core courses in language arts, mathematics, social studies and science for graduation. But, in each core subject area, there are options that make it easier to go directly to work or to enter the post-secondary training program of their choice.

GRADUATION PLANNING RESOURCES:

[Graduation Planner](#)

[Graduation Requirements](#)

For example, students are required to complete a Language Arts 12 course to graduate, but they do not have to take a Mathematics 12 course. This means they need to pick their Mathematics 11 course (or courses) carefully to fulfill the pre-requisites of any post-secondary training they want to pursue. For instance, an apprenticeship might require Workplace Mathematics 11 or Foundations of Mathematics 11. Some post-secondary programs might require Pre-Calculus 11, while others also ask for Pre-Calculus 12.

Electives

Choosing the right electives is as important as choosing the core courses. For example, students wanting to apprentice as electricians need Physics 11.

All students, including those who intend to go direct-to-work without any additional training, will benefit significantly from gaining skills and work experience directly applicable to jobs in the aviation and aerospace sector.

DUAL CREDIT OPTIONS

Dual credit courses (counted as elective credits) give BC high school students the opportunity to earn both high school and post-secondary credits at the same time.

Several BC school districts, in collaboration with a local post-secondary institute, offer dual credit options that might be of benefit to students interested in the aviation and aerospace sector. Check with your school district.

In addition, there are a number of courses available as electives that would be valuable for students interested in aviation and aerospace careers—for example:

- For students interested in the design, engineering, or building aspects of the aviation and aerospace industry:
 - » Drafting 11/12
 - » Coding for Manufacturing 12
 - » Electronics 11/12
 - » Engine and Drivetrain 12
 - » Machining and Welding 12
 - » Mechatronics 12
 - » Metalwork 11/12
 - » Robotics 11/12
 - » Furniture and Cabinetry 12
- For students interested in the business side of the aviation and aerospace industry:
 - » Accounting 11/12
 - » E-Commerce 12
 - » Entrepreneurship 11
 - » Marketing and Promotion 11
- For students interested in the research and development or environmental aspects of the aviation and aerospace industry:
 - » Chemistry 11/12
 - » Computer Information Systems 11/12
 - » Computer Programming 11/12
 - » Earth Sciences 11/12
 - » Environmental Science 11/12
 - » Geology 12
 - » Physics 12
- All students should also consider:
 - » relevant dual credit courses, where available
 - » relevant locally developed Board/Authority Authorized (BAA) courses, such as Civil Engineering Concepts, where available
 - » Work Experience 12A and 12B

WORK EXPERIENCE 12A AND 12B

In Work Experience 12A and 12B are each 100 to 120 hours long, the community is the classroom. Work site placements help prepare students for the transition from high school to the world of work by providing opportunities to gain valuable workplace knowledge, determine (or change) career goals, and develop job skills.

To find out more, see the [PROGRAM GUIDE FOR MINISTRY AUTHORIZED WORK EXPERIENCE COURSES](#).





- Students interested in an apprenticeship should consider:
 - » Youth Explore Trades Skills/Explore Trades Sampler
 - » Youth [Train in Trades \(TRN\)](#), and
 - » Youth [Work in Trades \(WRK\)](#)

RECOMMENDED CAREER-PREPARATION CERTIFICATES FOR CAREERS IN THE AVIATION AND AEROSPACE SECTOR

Most aviation and aerospace sector companies require applicants to have at least a high school diploma and a driver's licence. Acquiring relevant career-specific certificates can also ensure that students have a better chance of employment, or perhaps a higher level of employment, directly out of high school, college, or university.

Certifications can take anywhere from a couple of hours to several weeks to complete. Useful **safety** certifications include:

- CPR
- Confined Space Awareness
- Construction Safety Training System
- Fall Protection
- Occupational First Aid Levels 1, 2, & 3
- Workplace Hazardous Materials Information System (WHMIS)

Other certifications, depending on your job interests within the aviation and aerospace industry, include:

- Aerial Lift Platform, including boom and scissor lift
- Forklift Awareness
- FOODSAFE Level 1
- Radio Telephone Operator's Licence
- Serving It Right



Please note:

Some certifications are time-limited. For example, a CPR certificate is valid for three years only, then the person must re-certify.

It is a good idea for high school students to complete or renew their certifications close to graduation.

The aviation and aerospace sector also recommends students considering a career in flying aircraft or air traffic control apply for a Category 4 Medical Certificate or higher from a Transport Canada-approved doctor to ensure that they are physically able to undertake that kind of employment.

No fear of heights helps, too!

AVIATION AND AEROSPACE SUB-SECTORS

The aviation and aerospace industry is one of BC's fastest-growing industries. It is also one of the most diverse, encompassing a broad range of jobs. Some of these jobs call for minimal training; others demand distinct skills. Many tradespeople—such as electricians or welders who have worked in construction, for example—transfer into the aviation and aerospace industry and apply their skills in new ways.

For the purposes of this guide, we have divided the aviation and aerospace sector into three sub-sectors:

- **Design and Build it**
 - » the jobs involved in designing and manufacturing aircraft, spacecraft, and space systems
- **Fly It**
 - » the jobs involved in flying aircraft and spacecraft
- **Support It**
 - » the jobs involved in and around airports, plus those concerned with maintaining and repairing aircraft and ensuring the safety of aircraft and their crews and passengers



For more about aviation and aerospace careers, visit:

- [EducationPlannerBC](#)
- [WorkBC](#)
- [Careers in Aviation](#)



AVIATION AND AEROSPACE SUB-SECTOR PROFILE #1: DESIGN AND BUILD IT

Whether it's a huge supersonic jet or a tiny floatplane, a robotic arm, or a satellite, all aircraft and spacecraft—along with their engines, electronic systems (known as avionics), and technical equipment—need to be designed and built.

The following chart divides **Design and Build It** job possibilities into high-demand and lower-demand jobs. The list of high-demand occupations is based on industry feedback and the [British Columbia 2025 Labour Market Outlook](#).

DESIGN AND BUILT IT POSSIBILITIES

Route:	Job Possibilities:	Possible Credentials:
Apprenticeship	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Aircraft Maintenance Engineer – see <i>Sample Bundle 1</i> for a possible route to this career. • Carpenter • Electrician, Industrial • Floor Covering Installer • Heavy Duty Equipment Mechanic • Industrial Mechanic (Millwright) • Instrumentation and Control Technician • Machinist • Painter • Pipefitter • Plumber • Welder <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Cabinet Maker • Glazier • Metal Fabricators Fitter • Refrigeration and Air Conditioning Mechanic 	<ul style="list-style-type: none"> • ITA Certificate of Qualification • Interprovincial Red Seal Certificate

Route:	Job Possibilities:	Possible Credentials:
Certificate or Diploma	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Accounting Technician and Bookkeeper • Administrative Assistant • Aircraft Assembler • Aircraft Assembly Inspector • Aircraft Inspector • Aircraft Instrument, Electrical, and Avionics Mechanic, Technician, or Inspector • Aircraft Maintenance Engineer/Technician • Aircraft Mechanic • Aircraft Sheet Metal Technician • Aircraft Structural Engineer/Technician • Drafting Technologist or Technician • Electrical and Electronics Engineering Technologist or Technician • Electronics Technician • Machine Fitter • Mechanical Engineering Technologist or Technician • Non-Destructive Testers • Parts/Warehouse Worker • Technical Writer <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Junior Supervisor/Manager: <ul style="list-style-type: none"> • Computer and Information Systems • Human Resources • Product • Project • Quality • Safety Attendant 	<p>Certificate and diploma programs (13 weeks and up) available at BC post-secondary institutions include:</p> <ul style="list-style-type: none"> • Aircraft Gas Turbine Technician Certificate of Technical Studies • Aircraft Maintenance Engineer Diploma • Aircraft Sheet Metal Technician • Aircraft Structural Technician Certificate • Business Administration Diploma • Computer Aided Design and Drafting Diploma • Computer Numerical Control Machinist Technician Certificate • Eddy Current Level 1 Certificate • Light Warehouse Training Certificate • Management Skills for Supervisors Certificate • Millwright/Machinist Certificate • Project Management Associate Certificate
Degree	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Accountant • Aerospace Software Developer • Astronomer • Engineer: <ul style="list-style-type: none"> • Aerospace • Avionics • Electrical and Electronics • Mechanical • Engineering Manager • Insurance Broker/Underwriter • Physicist • Regulatory Inspector 	<p>All of these occupations require a bachelor's degree, such as:</p> <ul style="list-style-type: none"> • Bachelor of Commerce • Bachelor of Engineering • Bachelor of Science • Bachelor of Science in Software Systems • Bachelor in Software Engineering • Bachelor of Technology in Manufacturing





Route:	Job Possibilities:	Possible Credentials:
Degree (cont)	<ul style="list-style-type: none"> • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Advertising, Marketing, and Public Relations • Computer and Information Systems • Financial • Supply Chain • Technical Writer <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Human Resources • Product • Project • Quality • Sales 	<p>Some also require:</p> <ul style="list-style-type: none"> • additional certifications • a master's degree and/or • a doctoral degree
Direct-to-Work	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Administrative Assistant • Dispatcher • Marketing/Salesperson • Receptionist • Stores/Parts Person • Truck Driver • Upholsterer <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Cleaner/Janitor <ul style="list-style-type: none"> – see Sample Bundle 4 for a possible route to this career. 	<p>On-the-job training is available for many aviation and aerospace sector jobs. There are also some short training and certificate programs (from a few days up to 12 weeks) available at select BC post-secondary institutions. They include:</p> <ul style="list-style-type: none"> • Building Service Worker • Certificate in Sales and Marketing • Heavy Equipment Operator Technician Certificate • Truck Driver Certificate



Image: Courtesy of UFV

AVIATION AND AEROSPACE SUB-SECTOR PROFILE #2: FLY IT

All aircraft and spacecraft are meant to fly, and they all require crews with a range of skills to do it.

While the title for the most glamorous flying job must go to the pilot—including commercial airline pilot, test pilot, combat pilot, bush pilot, search and rescue pilot, and helicopter pilot, as well as chief astronaut—there are other jobs in flying as well. These include flight attendant, flight instructor, and all the jobs associated with a flying school, including aircraft maintenance.

How to become an astronaut

There is no direct path to becoming an astronaut—no “astronaut degree”—but according to the [Canadian Space Agency](#), “all astronauts have a few things in common: an academic background in science or technology, excellent health, and a wide range of outstanding qualities and skills.”

Most astronauts start with a bachelor’s degree in engineering, physics, chemistry, biology, geology, mathematics, or computer science, and/or a Ph.D. in medicine or dentistry.

How to become a pilot

There are three basic routes to becoming a pilot:

- completing a training program at a certified private flying school
- completing a diploma or degree program at a college or university, usually offered in conjunction with a private flying school
- joining the military

COMMERCIAL PILOT LICENCE

The Commercial Pilot Licence is the minimum licence required to be employed as a pilot. To hold this licence, you be at least 18 years of age, have a Category 1 medical certificate, and complete a minimum of:

- 65 hours of flight training
- 80 hours of ground school
- 200 hours total flight time, including not less than 100 hours pilot-in-command, of which 20 hours must be cross-country time.



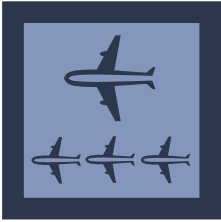


Image: Courtesy of UFV

Many pilots start by getting a recreational or private pilot’s licence through a flying school. With this kind of licence, they can fly within Canada for fun only. To fly for a living—with a commercial airline, for example, or a crop spraying or aerial surveying operation—pilots need either a commercial pilot’s licence (to serve as Co-pilot), or an airline transport licence (to serve as Captain).

The following chart divides **Fly It** job possibilities into high-demand and lower-demand jobs. The list of high-demand occupations is based on industry feedback and the [British Columbia 2025 Labour Market Outlook](#).

FLY IT POSSIBILITIES

Route:	Job Possibilities:	Possible Credentials:
Certificate or Diploma	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Aviation Maintenance Technician • Flight Engineer • Junior Supervisor/Manager: <ul style="list-style-type: none"> • Cabin Safety • Computer and Information Systems • Customer Services • Shift • Pilot – see <i>Sample Bundle 3</i> for a possible route to this career. <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Junior Supervisor/Manager: <ul style="list-style-type: none"> • Advertising, Marketing, and Public Relations • Financial • Human Resources • Sales 	<p>Certificate and diploma programs (13 weeks and up) available at BC post-secondary institutions include:</p> <ul style="list-style-type: none"> • Airline and Flight Operations – Commercial Pilot Diploma • Aviation Diploma • Aviation Maintenance Technician – Avionics Diploma • Commercial Aviation Diploma • Diploma in Business Administration – Aviation

<p>Degree</p>	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Accountant • Flight Engineer • Pilot – see <i>Sample Bundle 3</i> for a possible route to this career. • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Cabin Safety • Computer and Information Systems • Customer Services • Shift <p><i>Lower Demand:</i></p> <ul style="list-style-type: none"> • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Advertising, Marketing and Public Relations • Financial • Human Resources • Sales 	<p>All of these occupations require a bachelor's degree, such as:</p> <ul style="list-style-type: none"> • Advertising, Marketing and Public Relations • Financial • Human Resources • Sales <p>Some also require:</p> <ul style="list-style-type: none"> • additional certifications • a master's degree and/or • a doctoral degree
<p>Direct-to-Work</p>	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Flight Attendant • Flight Dispatcher • Flight School Receptionist <p><i>Lower Demand:</i></p> <ul style="list-style-type: none"> • Flight School Cleaner/Janitor – see <i>Sample Bundle 4</i> for a possible route to this career. 	<p>On-the-job training is available for many aviation and aerospace sector jobs. There are also some short training and certificate programs (from a few days up to 12 weeks) available at select BC post-secondary institutions. They include:</p> <ul style="list-style-type: none"> • Building Service Worker





AVIATION AND AEROSPACE SUB-SECTOR PROFILE #3: SUPPORT IT

Of course, all aircraft need someplace to take off and land. The **Support It** sub-sector includes airports, which are similar to small, self-contained towns—complete with their own roads, stores, restaurants, fire crews, and security.

Activities at an airport include:

- administration/operations
- air traffic control
- airport security
- baggage handling
- fire services
- flight dispatch
- food services
- fuel handling
- gate and counter ticket sales/handling
- ramp agent
- runway building and maintenance
- sky cap services
- wildlife control

Air safe organizations:

- [Transport Canada](#)
- [Transportation Safety Board of Canada](#)

The **Support It** sub-sector also includes:

- aircraft maintenance, repair, and overhaul services
- airport, aircraft, and passenger safety and regulation
- aviation insurance
- weather services

The following chart divides **Support It** job possibilities into high-demand and lower-demand jobs. The list of high-demand occupations is based on industry feedback and the [British Columbia 2025 Labour Market Outlook](#).

SUPPORT IT POSSIBILITIES

Route:	Job Possibilities:	Possible Credentials:
Apprenticeship	<p><i>High demand:</i></p> <ul style="list-style-type: none"> Aircraft Maintenance Engineer – see <i>Sample Bundle 1</i> for a possible route to this career. Architectural Sheet Metal Worker Boom Truck Operator Carpenter Electrician, Industrial Floor Covering Installer Heavy Duty Equipment Mechanic Industrial Mechanic (Millwright) Instrumentation and Control Technician Machinist Painter Pipefitter Plumber Professional Cook 1, 2, and 3 Welder <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> Baker (includes pastry chef) Cabinet Maker Glazier Metal Fabricator (Fitter) Refrigeration and Air Conditioning Mechanic 	<ul style="list-style-type: none"> ITA Certificate of Qualification Interprovincial Red Seal Certificate





Route:	Job Possibilities:	Possible Credentials:
Certificate or Diploma	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Accounting Technician and Bookkeeper • Administrative Assistant • Air Traffic Controller • Aircraft Assembler • Aircraft Assembly Inspector • Aircraft Inspector • Aircraft Instrument, Electrical, and Avionics Mechanic, Technician, or Inspector • Aircraft Maintenance Technician • Aircraft Mechanic • Aircraft Sheet Metal Technician • Aircraft Structures Technician • Airport Operations Specialist – see Sample Bundle 2 for a possible route to this career. • Aviation Maintenance Technician • Drafting Technologist or Technician • Electrical and Electronics Engineering Technologist or Technician • Electronics Technician • Facility Inspector (Aerodrome and Airside) • Flight Dispatcher • Flight Service Specialist • Junior Supervisor/Manager: <ul style="list-style-type: none"> • Airport Operations – see Sample Bundle 2 for a possible route to this career. • Computer and Information Systems • Financial • Ground Operations • Human Resources • Safety/Security • Machine Fitter • Mechanical Engineering Technologist or Technician • Meteorological Technologist or Technician <p><i>Lower Demand:</i></p> <ul style="list-style-type: none"> • Junior Manager/Supervisor: <ul style="list-style-type: none"> • Advertising, Marketing and Public Relations • Food Services • Human Resources • Product • Project • Quality • Restaurant • Sales • Supply chain • Safety Attendant 	<p>Certificate and diploma programs (13 weeks and up) available at BC post-secondary institutions include:</p> <ul style="list-style-type: none"> • Aircraft Gas Turbine Technician Certificate of Technical Studies • Aircraft Maintenance Engineer Diploma • Aircraft Sheet Metal Technician • Aircraft Structural Technician Certificate • Airport Operations Diploma • Airport Operations Associate Certificate • Automation and Robotics Technician Diploma • Business Administration Diploma • Business Management Certificate • Computer Aided Design and Drafting Diploma • Computer Numerical Control Machinist Technician Certificate • Culinary Management Diploma • Light Warehouse Training Certificate • Management Skills for Supervisors Certificate • Project Management Associate Certificate

Route:	Job Possibilities:	Possible Credentials:
Degree	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Accountant • Engineer: <ul style="list-style-type: none"> • Aerospace • Avionics • Electrical and Electronics • Mechanical • Engineering Manager • Financial Auditor • Meteorologist/Climatologist • Policy Analyst/Researcher • Regulatory Inspector • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Airport Operations • Computer and Information Systems • Ground Operations • Financial • Human Resources • Safety/Security <p><i>Lower demand:</i></p> <ul style="list-style-type: none"> • Senior Supervisor/Manager: <ul style="list-style-type: none"> • Advertising, Marketing and Public Relations • Food Services • Human Resources • Product • Project • Quality • Restaurant • Sales • Supply chain 	<p>All of these occupations require a bachelor's degree, such as:</p> <ul style="list-style-type: none"> • Bachelor of Arts in Environmental Studies • Bachelor of Commerce • Bachelor of Engineering • Bachelor of Science • Bachelor of Technology in Manufacturing <p>Some also require:</p> <ul style="list-style-type: none"> • additional certifications • a master's degree, and/or • a doctoral degree



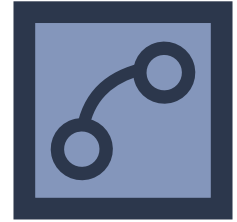
Image: Courtesy of UFV



Route:	Job Possibilities:	Possible Credentials:
Direct-to-Work	<p><i>High demand:</i></p> <ul style="list-style-type: none"> • Baggage Handler • Firefighter (Aircraft Rescue) • Food and Beverage Server • Fuel Handler • Heavy Equipment Operator • Kitchen Assistant • Marketing/Salesperson • Parts/Warehouse Worker • Office Support Worker • Ramp Agent • Receptionist • Security Guard • Upholsterer <p><i>Lower Demand:</i></p> <ul style="list-style-type: none"> • Cleaner/Janitor – see Sample Bundle 4 for a possible route to this career. • Marketing/Salesperson • Truck Driver • Wildlife Controller 	<p>On-the-job training is available for many aviation and aerospace sector jobs. There are also some short training and certificate programs (from a few days up to 12 weeks) available at select BC post-secondary institutions. They include:</p> <ul style="list-style-type: none"> • Building Service Worker • Certificate in Sales and Marketing • Heavy Equipment Operator Technician Certificate • Hospitality Certificate • Truck Driver Certificate



AVIATION AND AEROSPACE SECTOR CAREER ROUTES – SAMPLE BUNDLES



The four sample bundles of high school and post-secondary courses and training that follow illustrate how high schools, post-secondary institutions, and industry partners and employers may work together to develop a particular path for students to follow.

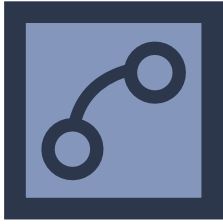
SAMPLE BUNDLE 1: APPRENTICESHIP ROUTE – AIRCRAFT MAINTENANCE ENGINEER

An Aircraft Maintenance Engineer:

- inspects aircraft, including airframe structures, engines, and aircraft systems
- disassembles and removes defective parts
- assembles and installs replacement parts
- interprets technical manuals, drawings, and blueprints
- tests aircraft systems
- records problems and actions taken to rectify them
- maintains an accurate maintenance history of the aircraft

Northern Lights College offers a 15-month [Aircraft Maintenance Engineer \(AME\) Basic Training](#) program in the [Aerospace Centre of Excellence](#), located on NLC's Dawson Creek Campus.





The program requires a combination of work experience and classroom instruction. Graduates of the program may receive an AME-Maintenance (AME-M) licence from Transport Canada (must be age 21 or older), as well as their Industry Training Authority Certificate of Qualification.

BCIT and [Okanagan College](#) also offer AME-M programs, while [Okanagan College](#) and the [University of the Fraser Valley](#) offer an Aircraft Structures (or AME-S) Technician Certificate. The AME-S emphasizes the external structure of aircraft.

APPRENTICESHIP – AIRCRAFT MAINTENANCE ENGINEER

Core High School Courses and Electives	Career-preparation Certificates	Aircraft Maintenance Engineer Apprentice Program	Credential
<p><i>Required:</i></p> <ul style="list-style-type: none"> English 12 Math 11 <p><i>Recommended:</i></p> <ul style="list-style-type: none"> Engine and Drivetrain 12 Science 12 Relevant locally developed Board/ Authority Authorized (BAA) courses, where available Work Experience 12A and 12B Explore Trades Sampler Explore Trades Skills Youth Train in Trades (TRN) Youth Work in Trades (WRK) 	<p><i>Recommended:</i></p> <ul style="list-style-type: none"> CPR Confined Space Awareness Occupational First Aid Level 1 WHMIS Driver's Licence 	<p><i>Theory courses include:</i></p> <ul style="list-style-type: none"> Theory of Flight Blueprints and Parts Aircraft Electricity Non-Destructive Inspection Tools for Aircraft Maintenance Hydraulics Turbine Engines Propellers Aircraft Control and Rigging Fuel and Environmental Systems Landing gear and Dynamic Drive Trains Navigation and Communication <p><i>Practical courses include:</i></p> <ul style="list-style-type: none"> Rivet Installation Aluminum Forming, Assembly, and Repair Electrical Installations Engine Components Engine Installation and Testing Engine Maintenance Weight and Balance and Aircraft Handling Hangar Support Facilities Landing Gear Troubleshooting and Repair 	<ul style="list-style-type: none"> ITA Certificate of Qualification

SAMPLE BUNDLE 2: CERTIFICATE/DIPLOMA ROUTE– AIRPORT OPERATIONS

Until 1992, airports in Canada were operated and maintained by Transport Canada. Since then, advisory boards comprised of individuals from municipalities and private enterprises have run our airport operations, with the help of professionally-trained personnel.

The 16-month BCIT diploma program in **AIRPORT OPERATIONS** provides entry-level training for airport workers in a range of subjects, ensuring they understand how an airport works, from runways and ramp operations, to security and emergency management.

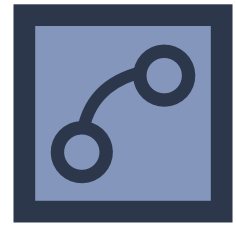
This is the only program of its type in Western Canada. An industry Advisory Committee, made up of airport and airline managers, airport field staff from Canada's local, regional, and national airports, and Transport Canada representatives, ensures the program continues to meet changing industry needs.

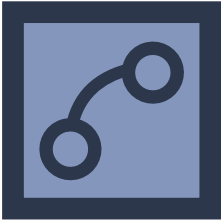
BCIT also offers an online **Airport Operations Part-time Studies Associate Certificate** that focuses on technological advancements in airport operations in such areas as security systems, airport master planning, airport safety, emergency preparedness, and airport management practices.

ITA TRAINING

International Air Transport Association (IATA), with its head office on Montreal, is the trade association for the world's airlines, representing some 265 airlines or 83% of total air traffic.

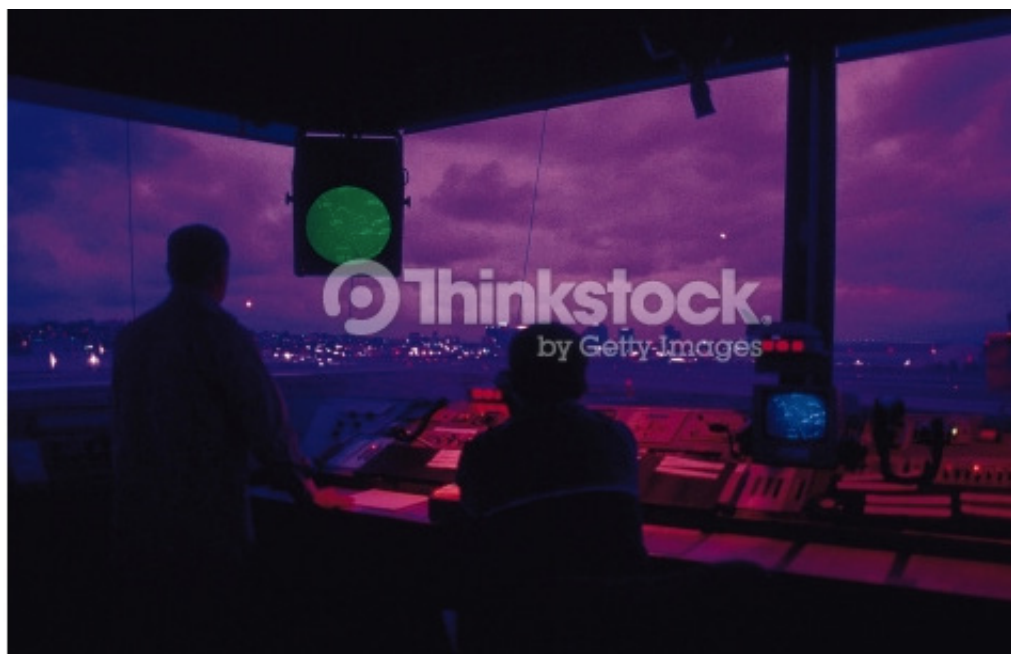
Once you are in the aviation and aerospace industry, IATA provides a number of courses and diplomas (some offered at training centres, others online) to help you learn more and move up in your profession.





CERTIFICATE OR DIPLOMA – AIRPORT OPERATIONS

Core High School Courses and Electives	Career-preparation Certificates	BCIT Airport Operations Program	Credential
<p><i>Required:</i></p> <ul style="list-style-type: none"> • English 12 • Math 11 <p><i>Recommended electives:</i></p> <ul style="list-style-type: none"> • Science 12 • Applied skills elective 11 or 12 • Relevant locally developed Board/ Authority Authorized (BAA) courses, where available • Work Experience 12A and 12B 	<p><i>Recommended:</i></p> <ul style="list-style-type: none"> • CPR • WHMIS • Occupational First Aid Level 1 • Driver's Licence 	<p><i>Term 1 includes:</i></p> <ul style="list-style-type: none"> • Employability Skills for Aviation Professionals • Air Navigation and Air Traffic Services • Aviation Meteorology <p><i>Term 2 includes:</i></p> <ul style="list-style-type: none"> • Aviation Safety and Risk Management • Airfield Design and Planning • Human Factors in Aviation <p><i>Term 3 includes:</i></p> <ul style="list-style-type: none"> • Airport Drawings • Airline Economics • Airport Emergency Management <p><i>Term 4 includes:</i></p> <ul style="list-style-type: none"> • Ramp Operations • Airport Law • Community and Public Relations for Aviation • Strategic Planning for Airports 	<ul style="list-style-type: none"> • Airport Operations Diploma of Technical Studies



SAMPLE BUNDLE 3: DEGREE ROUTE – PILOT AND BACHELOR OF BUSINESS ADMINISTRATION (AVIATION)

Both the University of Victoria and the University of the Fraser Valley offer programs that combine becoming a professional pilot with earning a bachelor's degree—meaning the graduate is not only on the road to becoming a captain, but also has the skills to assume a management role for an airline or airport.

The University of the Fraser Valley's four-year **BACHELOR OF BUSINESS ADMINISTRATION (AVIATION)** is offered in partnership with Coastal Pacific Aviation flight school, located at the Abbotsford International Airport.

The program includes over 200 hours of flight training in Cessna single engine and Piper multi-engine aircraft, and up to 175 hours on a variety of simulators, including a Navajo and Beechcraft King Air. Classroom work covers such subjects as the human factors that affect pilot decision-making, and how to be a valuable member of an airline crew. Academic courses include business and economics, supplemented by courses in science, English, social science, and the humanities. In their fourth year, students have the option to specialize in either heavy jet transport operations or professional flight instruction.

At the end of the UFV program, students graduate with:

- both private pilot and commercial pilot licences, certified by Transport Canada
- night and multi-engine instrument ratings
- a university degree in business administration

DEMAND FOR PILOTS

Boeing's *Pilot and Technician Outlook* reports that, between now and 2032, demand for pilots will grow as airlines across the globe expand their fleets and older pilots retire.

The largest growth in pilot demand is projected in the Asia Pacific region, with a need for 192,300 new pilots, 77,400 of them in China alone.

Europe will need 99,700 pilots, North America 85,700, Latin America 48,600, the Middle East 40,000, Africa 16,500, and the Commonwealth of Independent States 15,200

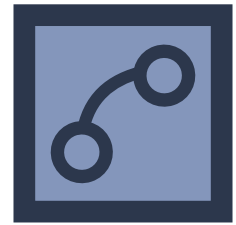




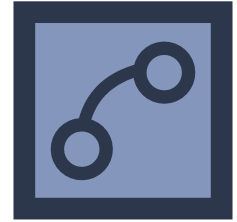
Image: Courtesy of School District #34

DEGREE – PILOT/BACHELOR OF BUSINESS ADMINISTRATION (AVIATION)

Core High School Courses and Electives	Career-preparation Certificates	UFV BBA (Aviation) Program	Credential
<p><i>Required:</i></p> <ul style="list-style-type: none"> • English 12 • Math 12 • Physics 11 <p><i>Recommended:</i></p> <ul style="list-style-type: none"> • Accounting 11 or 12 • Physics 12 • Second language courses • Applied skills elective 11 or 12 • Relevant locally developed Board/ Authority Authorized (BAA) courses, where available • Work Experience 12A and 12B 	<p><i>Required:</i></p> <ul style="list-style-type: none"> • Category 4 Medical Certificate <p><i>Recommended:</i></p> <ul style="list-style-type: none"> • CPR • WHMIS • Occupational First Aid • Driver's Licence 	<p><i>Year 1 and 2:</i></p> <ul style="list-style-type: none"> • Private Pilot Licence • Commercial Pilot Licence <p><i>Year 3 and 4:</i></p> <ul style="list-style-type: none"> • Fly multi-engine aircraft • Study instrumentation • Specialize with either a Heavy Jet Transport or Professional Flight Instructor option • Take business courses in such subjects as: <ul style="list-style-type: none"> • International Air Transportation • Aviation Management • Strategic Management 	<ul style="list-style-type: none"> • Bachelor of Business Administration (Aviation)

SAMPLE BUNDLE 4: DIRECT-TO-WORK ROUTE – BUILDING SERVICE WORKER

Vancouver Island University offers an intensive two-week, full-time **BUILDING SERVICE WORKER PROGRAM** that provides classroom and hands-on training in practical skills and cleaning procedures required in a variety of settings including airports, flight schools, aircraft manufacturing plants, etc. Participants also gain their WHMIS certification.



DIRECT-TO-WORK – BUILDING SERVICE WORKER

Core High School Courses and Electives	Career-preparation Certificates	VIU Building Service Worker Program	Credential
<p><i>Recommended</i></p> <ul style="list-style-type: none"> • English 12 • Math 12 • Science 12 • Applied skills elective 11 or 12 • Work Experience 12A and 12B 	<p><i>Recommended:</i></p> <ul style="list-style-type: none"> • CPR • Occupational First Aid Level 1 • Driver's Licence 	<ul style="list-style-type: none"> • Building Service Worker Introduction • Chemistry of Cleaning • Above Floor Cleaning • Hard Floor Cleaning • Restroom and Shower Cleaning • Hard Floor and Restroom Practice • Carpet Cleaning and Disinfection • Carpet Cleaning Practice • Co-operative Cleaning • Communication Skills • Time Standards • WHMIS 	<ul style="list-style-type: none"> • Building Service Worker Certificate





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Writer: Robin Miller

Copy Editor: Cindy John