# Aviation Commercial Operations



**Ontario College Diploma (2 Years - 4 Semesters ) (4162)**

705.759.6700 : 1.800.461.2260 : www.saultcollege.ca : Sault Ste. Marie, ON, Canada

## PROGRAM OVERVIEW

Embark on an amazing journey to a career in the airline industry with the Aviation Commercial Operations diploma program.

This two-year diploma program offers comprehensive academic training that includes aviation ground school courses and the option to purchase flight hours. Whether you choose to complete the academic portion alone or combine it with flight training, this program prepares you for in-demand careers in aviation.

If you complete flight training alongside the academic program, you will graduate with both a diploma and a Commercial Pilot License (CPL(A)). Flight training is conducted by Sault College at CYAM, a controlled airport with an advanced fleet of aircraft and access to both Canadian and U.S. airspace, ensuring efficient and high-quality training. Flight training costs are separate, and flight hours are completed alongside the academic program.

Through courses in mathematics, physical systems, electronics, and general arts, you will build a strong foundation for success in aviation careers. Graduates can pursue roles as commercial pilots, flight dispatchers, or in other aviation-related positions. Advanced opportunities, such as multi-engine and instrument rating micro-credential courses, are available if you wish to continue your training after graduation.

With our proximity to the U.S. border and our sister city, Sault Sainte Marie, Michigan, this program offers unique flexibility if you prefer to commute from the United States while completing your studies at Sault College. Offering FAA license conversion support, the Aviation Commercial Operations diploma program is the perfect start to launching your aviation career. It's time to take flight.

**This program is open to international students only.**

Not an international student? Click here to explore the Aviation Technology - Flight Program.

## ADMISSIONS

### MINIMUM ACADEMIC REQUIREMENTS

Ontario Secondary School (OSSD) or equivalent, mature student status. Plus:

- Grade 12 English, College Preparation (ENG4C) or substitute Grade 12 English, University Preparation (ENG4U)
- Grade 12 Mathematics for College Technology (MCT4C) or substitute Advanced Functions, University Preparation (MHF4U) or Calculus and Vectors, University Preparation (MCV4U)
- Grade 12 Physics, College Preparation (SPH4C) or substitute Grade 12 Physics, University Preparation (SPH4U), or Grade 11 Physics, University Preparation (SPH3U)
- Applicants must provide a Transport Canada Category 1 Medical Certificate to the Sault College Registrar`s Office by August 1st of their entry year.

- Applicants must demonstrate English proficiency. Sault College accepts the TOEFL iBT, or IELTS, or equivalent test to satisfy our English admission requirements.
- Minimum test scores required for: TOEFL iBT is 94
- Minimum test scores required for: IELTS is overall band of 7, no band lower than 6.5

## MEDICAL REQUIREMENTS

Final acceptance into the program is contingent upon satisfactory medical records filed with the College. This includes a photocopy of a **Transport Canada Category I medical certificate** and a photocopy of a **Canadian birth certificate** or a **Citizenship document** showing date of birth. The Category 1 medical may be obtained from any Canadian Aviation Medical Examiner. A list of doctors is available on Transport Canada`s web site. Note: Upon arrival to the College, the originals of these documents must be produced in order to facilitate licencing. For students who currently hold a Canadian Pilot Licence or Permit, a copy of the Licence/Permit must be submitted. Students must renew their Category I medical certificate prior to writing the Transport Canada Commercial Written exam in Semester 5. Due to the Canadian Air Regulations (CARs) and the College`s aircraft manufacturer`s specifications, all pilots are required to adhere to weight and balance restrictions. These weight restrictions are accessible in the manufacturer`s pilot operating handbook, copies of which are readily accessible at both the College and College airport hangar locations.

**Proof of English Language Proficiency -** With English being the international language of aviation, all training in the Sault College aviation program is conducted in English. Transport Canada, the industry regulator, requires aviation license candidates to demonstrate an expert level proficiency in English.

Canadian citizens who have graduated from a Canadian English or French speaking high school and, those who can provide evidence that they have completed their studies in either English or French will qualify for the informal demonstration in the language indicated on their high school diploma; provided the Chief Flight Instructor (CFI) of a Flight Training Unit (FTU) is satisfied that the person can demonstrate the competencies of Expert Level 6 as listed in standard 421.06(4) of the CARs. If there is any uncertainty as to whether the student is to the expert level 6 standard, the CFI will request a formal aviation language assessment. It is important to note that this assessment for Sault College students, if required, will be completed in English only.

If the applicant or student is uncertain that they are at an expert level, they can request a meeting with the CFI to discuss.

Sault College reserves the right to have the student conduct a formal aviation language proficiency demonstration.

A 2nd class FAA medical certificate will be accepted in lieu of a Transport Canada Category 1 medical certificate to meet entrance requirements. Students will be required to apply for a Canadian medical certificate once in the program.

## DRESS CODE

Professional Pilots are well groomed and properly dressed. Since students at Sault College are working towards becoming Professional Pilots, they should also be well groomed and properly dressed. Dress code will be observed at the college up to 1700 hrs during week days and at all times at the Hangar. Activities, such as tests after 1700 hrs or weekend non-flying activities, will be at the discretion of the professor. The following dress code guidelines will be observed:

**Hair**

- Facial hair other than for religious reasons shall be neatly trimmed and maintained (to reflect professionalism).
- Hair is to be clean and groomed at all times.
- While flying, hair shall be neatly pulled back so as not to obstruct vision including peripheral vision.
- Hairstyle must be such that it does not draw undue attention. Radical hairstyles or colouring are not allowed.

**Dress Attire Mandatory**

- The Colleges aviation uniform (available via the colleges bookstore) shall be worn. It consists of a white pilot shirt embroidered with the Sault College Aviation logo, dark blue dress pants and a matching blue tie. During winter operations, a matching dark blue sweater also embroidered with the college logo can be worn overtop the pilot shirt and tie. The shirt must be tucked in at all times. For summer flight operations see section 6.1.3 Summer Operations. Casual or dress socks shall be worn. No athletic socks. No running shoes are allowed. Leather shoes are preferable for classroom work and hiking boots are a good choice when flying. During the winter months, proper boots either need to be worn or be on board the aircraft. High heels are a hazard to the operation of the rudder pedals and not allowed in the aircraft. Wrist jewellery that can catch on switches or controls not allowed. Ball caps are only to be worn in the aircraft for the purpose of shading eyes from the sun. They shall be worn straight and are not to be worn indoors at the College or at the Hangar.

**Other**

- Personal hygiene shall be a priority. Students will spend a large amount of time in close proximity to other students and their instructors. Excessive use of cologne, perfume, body spray, and aftershaves is as offensive or distracting as poor hygiene. Make up is to be conservative. Fingernails shall not be unreasonably long. Earrings shall be limited to one per ear and must be small enough to not interfere with an aviation headset. (Studs vs. hoops would be preferable.)

**Winter Operations**

Pilots must dress for survival for every flight, even local flights, winter and summer. If an aircraft was to make a forced landing in winter, the pilot and passengers must be prepared to, at the very minimum, spend the night in the woods. The chances of survival, even in the fall and spring, will be greatly diminished if proper clothing is not worn. For winter flying, the following is a minimum list:

- A winter parka, or at the very minimum a good quality ski jacket with at least one additional layer of a wool or fleece sweater. The heavy coat is not usually worn while flying, but must be present in the aircraft. Winter underwear or in its absence, ski pants on board the aircraft. Proper winter boots either worn or on board the aircraft. A proper winter hat such as a wool cap, and good quality gloves or mittens.

**Summer Operations**

- At the discretion of the duty pilot, ties may be removed during very hot days. College issued aviation polo shirts may be worn in lieu of shirt and tie during the summer semester. (May 1st until September 1st).

This Dress and appearance code complies with the Human Rights Standards of Canada.

## OTHER INFORMATION

Program College Contact: Paul Bursche, paul.bursche@saultcollege.ca

## PROGRAM OF STUDY

**SEMESTER 1**

ATQ112-3 Navigation and Weather Fundamentals
AVF115-2 Airframes, Engines and Zlin Systems
AVF117-2 Flight Theory and Operations
AVT119-2 Human Factors in Aviation
AVT123-1 Air Law I
ELR104-3 Electrical Fundamentals
MTH612-4 Mathematics
PHY125-4 Physics

**SEMESTER 2**
AVF111-2 Meteorology I & II
AVF122-2 Navigation I & II
AVF245-2 Airframes and Engines II
AVT125-1 Air Law II
CMM115-3 Communications I
MEC101-4 Statics
MTH613-4 Technical Mathematics
GEN100-3 Global Citizenship

**SEMESTER 3**
AVF241-2 Meteorology III
AVF242-2 Navigation III
AVT247-2 General Knowledge for Aviation
AVT248-2 Human Factors in Flight
AVT254-2 Air Law III
ELN224-3 Digital Electronics and Avionics
MEC201-3 Dynamics
MTH626-4 Calculus
REC106-3 Fitness and Lifestyle Management

**SEMESTER 4**
AVT258-2 Instrument Procedures
AVT361-3 Meteorology IV
AVT366-2 Aircraft Systems Preparation for Flight
CMM210-3 Technical Communication
MCH221-4 Hydraulics Systems
MTH654-4 Technical Mathematics

***Select one of the following:***
*GEN110: Student Selected General Education*

## Course Descriptions

**Semester 1**

**Navigation and Weather Fundamentals** (ATQ112) (3 credits)

This course will introduce the principles of aeronautical navigation and equip individuals with the skills to interpret aviation weather reports, forecasts, and associated symbols. It`s designed for those aspiring to careers in aviation and the air transportation system.

**Airframes, Engines and Zlin Systems** (AVF115) (2 credits)

A study of the topics necessary to determine that an aircraft is ready for flight, including an overview of

airframes and engines and a study of the systems and performance for the aircraft used for flight training, documents and airworthiness, dispatch procedures, record keeping, weight and balance, servicing and elementary maintenance).

**Flight Theory and Operations** (AVF117) (2 credits)

This course introduces students to fundamental aerodynamic principles and theories, emphasizing their practical applications. It covers the use of performance charts to estimate key flight parameters such as cruise, range, endurance, and takeoff and landing performance. Students will learn about power and thrust requirements, principles of aircraft loading, and design characteristics of various airplane categories, with a focus on the need for economically efficient air transportation. The course also includes an introduction to essential flight instruments and their role in aircraft performance and navigation. By the end of the course, students will have a comprehensive understanding of how aerodynamic principles are applied in real-world aviation scenarios, enabling them to estimate and optimize aircraft performance effectively.

**Human Factors in Aviation** (AVT119) (2 credits)
Students enrolled in the aviation technology (flight) program will participate in 3 human factor courses. This, the first course, provides an introduction to human factors with a focus on basic flight physiology. You will learn why human factors are so important and the role they will play in your career. The topics covered include: basic human anatomy, hearing, vision, altitude physiology, the atmosphere, sleep and circadian rhythms, stress, situational awareness and orientation, acceleration and motion sickness.

**Air Law I** (AVT123) (1 credits)
This course provides the base understanding of the regulatory agencies and their role in overseeing all aspects of flying. Topics include basic rules of flight manoeuvring, airspace classification, airport operations, medical and licensing requirements, and various safety related issues, such as oxygen requirements and marginal weather conditions.

**Electrical Fundamentals** (ELR104) (3 credits)
Fundamental principles of direct and alternating current theory, are studied including Ohm`s Law, series and parallel circuits, power, electrical instruments, inductance and capacitance, magnetic fields, reactance and impedance.

**Mathematics** (MTH612) (4 credits)
Students will develop skills needed to solve problems in technical mathematics. Topics include a detailed review of algebra followed by a study of quadratic equations, exponential and logarithmic functions and trigonometric functions.

**Physics** (PHY125) (4 credits)
Topics included are properties of fluids, forces, and pressure involved in hydrostatics and hydraulics, wave motion and propagation, properties and intensity levels of sounds.

**Semester 2**

**Meteorology I & II** (AVF111) (2 credits)

This course equips aspiring pilots with the knowledge and skills needed to excel in the meteorology section of the Transport Canada Private Pilot written exam. It also trains students to interpret weather reports and forecasts effectively, ensuring they are well-prepared for flight operations. By providing an in-depth understanding of meteorological theory, the course lays a strong foundation for sound weather-related decision-making. Additionally, it serves as a cornerstone for advanced meteorology studies in the second and third years of the Aviation Program.

**Navigation I & II** (AVF122) (2 credits)

This course starts with the basic elements involved in Dead Reckoning Navigation. These elements are then combined to enable pilots-in-training to pass the navigation section of the Transport Canada Private Pilot written exam and to learn the techniques that pilots use for navigating in flight. This knowledge is also the basis for the Transport Canada Commercial Written exam in second year, and is also preparatory ground instruction for the Private Pilot Licence.

**Airframes and Engines II** (AVF245) (2 credits)
A study of engines and airframes including the internal combustion engine and the basic gas turbine engine, fuels and fuel systems, lubrication and oil, ignition systems, engine instruments, propellers, airframes, and electrical systems at the Commercial Pilot Level.

**Air Law II** (AVT125) (1 credits)

This course is a continuation of Air Law l and prepares the student for the air law section of the Transport Canada PPAER written exam. An introduction to commercial air law required for the Transport Canada CPAER written exam is provided. A passing mark of the Air Law section of the PPAER will be a requirement to be successful in this course.

**Communications I** (CMM115) (3 credits)

This course is designed to help students develop the skills necessary to communicate effectively in their programs and at the college level. Students will think critically to capture the meaning messages and respond appropriately; produce coherent, clear paragraphs; and purposively research and responsibly integrate credible sources into their own writing. Emphasis is placed on the writing process, from planning to revising, while providing opportunities to explore various modes of communication.

**Statics** (MEC101) (4 credits)

This course entails a thorough study of statics, providing fundamental skill for further development in various studies. Topics include: force vectors, components, resultants, moments, couples, equilibrium in force systems, trusses and frames, centrolds, friction laws, impending motion, centroids and centers of gravity.

**Technical Mathematics** (MTH613) (4 credits)
The course includes topics in Plane Analytic Geometry, introduction to Calculus including derivatives and integration of algebraic functions; applications of integration.

**Global Citizenship** (GEN100) (3 credits)
The world we are living in is one in which local, national and international issues are interwoven, and the need for us to understand the impact these issues can have on our lives has never been greater! Using a socio-cultural, political and environmental lens, students will view how the world is changing and how to become active agents of change from the local to international level. Important issues such as social injustice, poverty, environmental protection, resource scarcity, sustainability, and health will be addressed. Global citizenship is an opportunity to `Be the Change`. This course meets the Civic Life and Social and Cultural Understanding General Education themes.

**Semester 3**

**Meteorology III** (AVF241) (2 credits)

This course reviews the theory and meteorological services for pilots learned in first year meteorology and explore more advanced theory in preparation for writing the Transport Canada Commercial Written Exam (CPAER). A passing mark of the Meteorology section of the CPAER qualification exam will be a requirement

to be successful in this course.

**Navigation III** (AVF242) (2 credits)

This course provides an in depth look at radio navigation. Specifically, the VOR, ADF and GNSS navigation aids. This is in preparation for the skills required for the Transportation Canada Commercial written exam and Flight Test. A passing mark of the Navigation section of the CPAER qualification exam will be a requirement to be successful in this course.

**General Knowledge for Aviation** (AVT247) (2 credits)

This course expands on the general knowledge of theory, aerodynamics, engines, airframes and instruments with a quantitative analysis and greater depth. Other topics relate to formulae and performance charts dealing with weight and balance, cruise performance, multi-engine operations, unusual attitudes, recognition of system failures and emergency procedures A passing mark of the General Knowledge section of the CPL Qualifier and CPAER will be a requirement to be successful in this course.

**Human Factors in Flight** (AVT248) (2 credits)

Students will examine how psychological and physiological factors play an important role in flight safety. Some of the topics included are pilot decision-making, human error, communications and attitudes in aviation. Case studies of domestic and international aircraft incident and accident reports will be examined to determine cause-analysis, in the hope of preventing similar mistakes by future pilot generations.

**Air Law III** (AVT254) (2 credits)

This course reviews all of the general regulations plus those sections of the Canadian Air Regulations specific to Air Taxi operations. The course is designed to familiarize the students with regulations governing ground operations, personnel qualifications, and aircraft equipment requirements and training programs for Air Taxi Operations. A passing mark of the Air Law section of the CPAER qualification exam will be a requirement to be successful in this course.

**Digital Electronics and Avionics** (ELN224) (3 credits)
This course is a study of modern digital devices and circuits. The student will study Digital Numbering Systems, Boolean algebra, common Digital Integrated circuits, as well as other pulse shaping/generating circuits. Emphasis will be placed on the analysis and troubleshooting of these devices and circuits. Rounding out the course is an application component covering the flight instruments and electronic circuits, which produce transmit and condition analog and digital signals.

**Dynamics** (MEC201) (3 credits)

This course advances the study of mechanics into the area of dynamics. Topics include: KINEMATICS (uniformly accelerated motion, projectile motion, circular motion, Newton`s Second Law rectilinear and angular motion), inertia, dynamic equilibrium (work, energy forms, power, efficiency), impulse and momentum (linear and angular), dynamic friction.

**Calculus** (MTH626) (4 credits)
This course is a continuation of MTH613 and provides the student with a more advanced study of calculus. Topics of study include differentiation and integration of algebraic, trigonometric, exponential and logarithmic functions with an emphasis on applications.

**Fitness and Lifestyle Management** (REC106) (3 credits)

This course deals with the pursuit of wellness with a focus on physical fitness. Topics include: positive lifestyle choices, self-management and behaviour change techniques, exercise prescription, fitness training

methods and body composition management.  Students are introduced to a diverse range of fitness activities designed to promote lifelong health and wellbeing.

**Semester 4**

**Instrument Procedures** (AVT258) (2 credits)

This course reviews key instrument flight topics, including VORs, GPS, ADF, pitot-static systems, magnetic compasses, and gyroscopic instruments, to build on previous knowledge. Students will learn the rules and procedures for flying in instrument conditions, covering navigation aid tracking, general flight rules, and departure, enroute, arrival, and holding procedures. The course emphasizes using official resources like the Canadian Air Pilot and Canadian Aviation Regulations (CARs) for accurate and reliable information.

**Meteorology IV** (AVT361) (3 credits)

Meteorology IV builds upon foundational meteorology concepts from the first two years, delving into advanced topics critical for aviation safety. The course covers airframe icing, exploring conditions that cause icing, types, catch rates, and associated hazards. Students will examine the stages of thunderstorm development and the hazards they pose. The formation of jet streams and the resulting clear air turbulence will be analyzed. Emphasis will be placed on practical meteorology, including interpreting Significant Weather Prognostic Charts, Upper Air Analysis Charts, Canadian Turbulence Forecast Charts, and using Satellite and Radar imagery. This course aims to equip students with the meteorological expertise necessary for effective flight planning and operational decision-making.

**Aircraft Systems Preparation for Flight** (AVT366) (2 credits)

A study of electrical hydraulic, fuel, oil, oxygen, and firefighting systems in the aircraft used for multi-engine training as well as in a modern, turbine, pressurized transport aircraft.

**Technical Communication** (CMM210) (3 credits)

This course provides skill development in technical communication. Emphasis is given to technical language in the preparation of workplace documents such as informal reports, memos, letters, technical instructions, an employment package, and a research/formal report. Oral reporting and its importance on the job are also included. Document design and electronic research using databases and the internet are essential components of this course.

**Hydraulics Systems** (MCH221) (4 credits)
Areas to be studied are as follows: basic theory of hydraulics, theory and assembly of pumps, pressure control valves, directional valves, flow control valves, circuits, and troubleshooting simple systems related to aircraft.

**Technical Mathematics** (MTH654) (4 credits)
This course is a continuation of MTH626 and provides the student with a more advanced study of calculus. Topics of study include methods of integration, first and second order differential equations and series expansions.

**Student Selected General Education** (GEN110) (3 credits)

For Transfer Credit Purposes only.