

## PROGRAM OVERVIEW

This certificate program will prepare students interested in a career in aviation and help them discover which aspect of aviation suits their interest and skill sets.

This program will expose students to various careers in the aviation sector while providing tangible skills and outcomes on which to build a career in aviation.

Aviation Techniques is configured as a standalone certificate granting program with the following goals:

1. Providing information on Aviation careers and foundational knowledge to prepare graduates to write the Transport Canada Flight Dispatcher examination. From here launch a career with a Flight School, Air Charter or Airline.
2. For students with an interest in aviation and a desire for a University degree, this program creates a bridge with the General Arts and Science (GAS) programs at Sault College and a pathway to the University preparation 2-year diploma. We would be proud to see you off to University to build a career in the Aviation sector in management, marketing, design – it is your path to choose.
3. If you are thinking about the Aviation Technology – Flight program but feel you need to build on some pre-requisites to gain some more related knowledge before taking the leap, then this program is for you. This can be a pathway to join your Sault College colleagues in flight training to earn a Commercial Pilot Licence.

The courses were selected to assist students in the development of their knowledge and skills who have an interest in Aviation and want to build a career around their interests. Aviation is a complex and challenging career and this program includes a range of courses that will provide students with the necessary knowledge and skills to tackle topics that may be difficult to master.

Graduates of this certificate program will be able to write the Transport Canada dispatcher exam to become a Flight Dispatcher and earn that micro-credential. This program can serve as your pathway program to those pursuing a professional career in commercial aviation either through GAS University Transfer 2 year Diploma program or as a commercial pilot via the Sault College Aviation Technology - Flight Diploma.

## PROGRAM OUTCOMES

1. Recognize and eliminate unsafe conditions in the aviation setting to maintain a safe work environment.
2. Perform basic techniques and standard practices used in aviation in order to increase skill level to enter next phase of learning and practice about aviation flight and industry.
3. Apply mathematical concepts and operations to verify various aviation-related conversions, calculations, measurements, and layouts.
4. Relate the concepts of technical physics to aircraft flight to support more in depth studies of Physics and Aviation theory and flight practice.
5. Apply oral and written technical communication skills to succeed in college level aviation programs.

6. Explain the purpose and function of key components of a general type aircraft to support safe aircraft operation and maintenance.
7. Apply computer skills required to succeed in college level aviation programs.
8. Develop effective learning and study skills to support success in the current program of study and advancement into subsequent, higher level, studies in Aviation.
9. Identify various career paths related to aviation.

## ADMISSIONS

### MINIMUM ACADEMIC REQUIREMENTS

Ontario Secondary School Diploma (OSSD) or equivalent, mature student status

Applicants must also have:

Grade 12 English, College Preparation (ENG4C), or equivalent;

Grade 12 Mathematics for College Technology (MCT4C), or equivalent.

## CAREER PATHS

This is a preparatory program intended to support students' entrance into a career in the Aviation Sector. The program prepares the student for a career as a Flight Dispatcher with a Flight School, Charter Airline, Regional Airline and ultimately with a major national airline.

Students may decide to continue their education within the Aviation Technology - Flight program with a goal of careers as flight instructors, charter pilots, corporate pilots or flying for a major airline.

Students who continue their education with the General Arts and Science University Transfer program may have careers such as management, administration, marketing or design within the Aviation and Aerospace industry in their future.

## EDUCATIONAL PATHS

This program provides training in the knowledge requirements for the Transport Canada Flight Dispatcher examination.

Students may ladder into:

- General Arts and Science University Transfer 2-year Diploma program or,
- Aviation Technology - Flight 3-year Advanced Diploma program.

Some program credits are directly transferrable to the Aviation Technology - Flight Diploma with the potential of reducing future course load.

## OTHER INFORMATION

Program Coordinator: Paul Bursche, (705) 759-2554 ext 2529, [paul.bursche@saultcollege.ca](mailto:paul.bursche@saultcollege.ca)

## PROGRAM OF STUDY

### SEMESTER 1

ATQ111-2 Career Pathway - Professional Pilot  
ATQ112-3 Navigation and Weather Fundamentals  
ATQ113-2 Studies of Aviation History and Structure  
ATQ114-2 Health and Safety for Aviation  
CMM110-3 College Communication Skills  
GEN100-3 Global Citizenship  
MTH142-5 Mathematics  
PSY102-3 Introduction to Psychology

### SEMESTER 2

ATQ121-2 Air Operations  
ATQ122-2 Aviation Electronics  
ATQ123-3 Aviation Motive Power  
GAS106-3 Communication: Theory and Practice  
HST105-3 History of Western Civilization - Part One  
MTH143-5 Mathematics  
PHY117-3 Concepts of Technical Physics  
REC106-3 Fitness and Lifestyle Management

## Course Descriptions

### Semester 1

#### **Career Pathway - Professional Pilot (ATQ111) (2 credits)**

This course provides an overview of the licenses, ratings, and medical requirements which are necessary to become a professional pilot. The course will introduce the licenses and ratings on the way to becoming a professional pilot, and will specifically explore the certification stages of Sault College's Aviation Technology Flight program, beginning with the Private Pilot's License, and completing with the Group 1 Instrument Rating. The differences of integrated and non-integrated flight training programs will also be explored.

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

This course will introduce the principles of aeronautical navigation and the fundamentals of weather to individuals who are interested in becoming pilots. Subjects will include map reading, dead reckoning, weather pressure patterns, frontal systems, how precipitation and fog forms, how to interpret weather maps, and so on.

#### **Studies of Aviation History and Structure (ATQ113) (2 credits)**

This course will examine the history of aviation in Canada, regulatory bodies involved in the molding of aviation law and observe the impact of government withdrawal from aviation agencies and resources. Aviation organizational structures will be described and types of related businesses such as airlines, flight schools, corporate entities and airports will be defined.

#### **Health and Safety for Aviation (ATQ114) (2 credits)**

This course provides students with a base of knowledge of regulatory requirements for Safety Management System (SMS) implementation as outlined in Transport Canada's Canadian Aviation Regulations (CARs) and the International Civil Aviation Organization (ICAO). The course will provide students with an understanding of Safety Management System components, including but not limited to, safety management plans, risk assessment and reporting, data collection, the risk matrix and emergency response preparedness. Aviation-related case studies will be examined which outline the failure of poorly designed, implemented and/or managed Safety Management Systems.

### **College Communication Skills (CMM110) (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 of messages and respond appropriately; produce coherent, clear paragraphs and essays; and purposefully 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.

### **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.

### **Mathematics (MTH142) (5 credits)**

This first level mathematics course for engineering technology programs begins with a review of fundamental concepts, arithmetic operations, and units of measurement. This is followed by an in-depth study of basic algebra, trigonometric and other functions, and quadratic equations.

### **Introduction to Psychology (PSY102) (3 credits)**

A study of the science of psychology; its methods, concepts and theories, including the following topic areas: (1) biological bases of behaviour and perceptual processes; (2) intelligence, learning and memory; (3) motivation and emotion, and (4) states of awareness. Psychological concepts will be studied with a view towards how they can be applied to enhance the student's understanding of psychological adaptation and the cases and consequences of human behaviour.

## **Semester 2**

### **Air Operations (ATQ121) (2 credits)**

Air Operations is designed to provide an overview of Canadian Aviation Regulations, air traffic procedures, aircraft operations, radio aids, and flight planning. This course is recommended for students who are considering the Aviation Technology-Flight program in the future. This course, combined with Introduction to Navigation and Meteorology, consists of the common body of knowledge required to pass both of Transport Canada's Flight Dispatcher's examinations.

### **Aviation Electronics (ATQ122) (2 credits)**

This course is an introduction to basic electrical theory in general and as it relates to Aviation. The student will be exposed to the means of generating electrical power on small general aviation type aircraft. The student will begin to understand the relationship between magnetism and electrical generation. Applying Ohm's law and various other mathematical formulas the student will discover how basic DC circuits operate. The student will then take this knowledge and build a simple circuit in a lab with assistance from the professor where they will measure the load drop across various components, the current in the circuit and apply Ohm's law and Kirchhoff's law to validate their results. The student will be able to identify circuit protection sources used in aircraft and why they are important for safety using the knowledge gained from their basic circuit construction.

### **Aviation Motive Power (ATQ123) (3 credits)**

This course is an introduction to basic aircraft power plant construction as it relates to small piston engines commonly found in general aviation type aircraft. In a lab environment the student will be exposed to

various types of components found in engines and asked to identify them and state their purpose. Basic engine layout and ways of providing fuel sources for combustion will be explored, as well as the benefits and downside to each. At the end of the course the student should have a basic understanding of how piston engines work, what a stoichiometric ratio is, how and why aircraft engines are leaned and why proper fuel grades are important.

**Communication: Theory and Practice (GAS106) (3 credits)**

This course provides the foundations of effective human communication. It focuses on three specific areas of competence: small group competence, interpersonal communication, and public speaking. Each of these areas is reinforced through a variety of learning methods and media: lectures, group discussions, group projects, readings, film analysis, and reflective learning portfolio.

**History of Western Civilization - Part One (HST105) (3 credits)**

This course will introduce the student to the ancient world of the past. We will examine the ages from pre-historic times to the first civilizations: from the first great empires, through the middle ages, to the age of enlightenment. The student is introduced to the histories of ideas, politics, economics, religion, and society as well as other disciplines, thus enabling him/her to link these worlds with this one, thereby leading to a more complete understanding of the human experience.

**Mathematics (MTH143) (5 credits)**

This course is a continuation of MTH142 (from Semester I) for engineering technology students. Topics of study include exponents and radicals, plane analytic geometry, solid mensuration, and functions including trigonometric, exponential and logarithmic functions. This course concludes with an introduction to statistics.

**Concepts of Technical Physics (PHY117) (3 credits)**

This course introduces students to the concepts of physics related to trades and technology fields of study. Students will participate in lectures, class demonstrations and laboratory work. Lab exercises will develop and reinforce the concepts learned in the course. Students will also develop an appreciation for physics as a science and its broad impact on the world as we know it.

**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 fat management. Students are introduced to a variety of fitness activities known to maximize health benefits while providing lifelong appeal.