Locally Developed Courses

Aviation - Flight

For the 2023-2024 School Year

Introduction to the Aviation - Flight Course Sequence

Subject: Career and Technology Studies - Discipline: Career Transitions

Aviation - Flight aims to expose students to the relevant skills, training, and knowledge in order to explore the world of airplane operation. The Aviation - Flight sequence focal points are Transport Canada standards of pilot knowledge and a practical element where students will operate an aircraft in a simulated environment such as a flight simulator or a computer outfitted with flight peripherals such as pedals, a flight yoke, and simulation software.

Aviation - Flight will also expose students to the lifestyle and requirements of a career pilot, this will include mapping the post-secondary pathway to achieving that goal. Aviation - Flight seeks to inspire and motivate students toward a career in aviation with a focus relevant to course materials to support educational goals by applying skills from Math, Physics, and Earth Sciences. The Aviation - Flight sequence will provide the opportunity to develop the skills necessary to succeed in aviation. Students will be prepared for future careers in the aviation field by developing a transitional plan to post-secondary programs that includes entrance requirements. Students may access Transport Canada exams and upon successful completion will have met the criteria for the “ground school” portion of pilot training.

Student Need

The aim of this sequence is to provide students with an exploratory option to prepare for the requirements of an aircraft operation career path.

Students will be introduced to key concepts, processes and models to foster greater depth toward analyzing, assessing and demonstrating governing connections in aviation. In the study of Aviation–Flight, students will explore the appropriate skills and competencies necessary for simulated flight operation and the relative benefits associated with career opportunities.

Students will develop an analytical and reflective approach toward growth and development, particularly in the context of aviation safety. Throughout the course sequence, students will enhance their communicative, active observational and documentation skills of various aviation procedures. The Aviation - Flight courses promote the development of engaged and critical thinkers by allowing students to strive for an authentic personal experience augmented by a unique continuum of learning opportunities that responds to individual student needs.

Courses in the Aviation - Flight Course Sequence

Aviation - Flight 15 (LDC1351)

The Aviation - Flight courses are based on expectations equivalent to Transport Canada and as such, students will work with real-world curricula from which they may identify an apply career and life skills through their learning. Students will gain knowledge, understanding and skills through their experiences in this course. Aviation and will be required to think critically, conceptualize and apply the knowledge they gain.;
At the 15 level, Transport Canada documentation for pilot training, are based on the progression of studying the standards and requirements supports obtaining a private pilot's license..

> No required facilities

Prerequisites: None

Versions Available: (Each version must be locally approved by Board Motion prior to offering to students.)

Credit Level	First School Year	Last School Year
3	2023-2024	2026-2027

Aviation - Flight 25 (LDC2351)

The Aviation - Flight courses are based on expectations equivalent to Transport Canada and as such, students will work with real-world curricula from which they may identify an apply career and life skills through their learning. Students will gain knowledge, understanding and skills through their experiences in this course. Aviation and will be required to think critically, conceptualize and apply the knowledge they gain.

At the 25 level, Transport Canada documentation for pilot training, based on the progression of studying the standards and requirements supports obtaining a commercial pilot's licence.

> No required facilities

Prerequisites:

- All of the following:
  - Aviation - Flight 15 (LDC1351)

Versions Available: (Each version must be locally approved by Board Motion prior to offering to students.)

Credit Level	First School Year	Last School Year
3	2023-2024	2026-2027

Aviation - Flight 35 (LDC3841)

The Aviation - Flight 12 course are based on expectations equivalent to Transport Canada and as such, students will work with real-world curricula from which they may identify an apply career and life skills through their learning. Students will gain knowledge, understanding and skills through their experiences in this course. Aviation and will be required to think critically, conceptualize and apply the knowledge they gain.

At the 35 level, Transport Canada documentation for pilot training, based on the progression of studying the standards and requirements supports obtain an Instrument flying certification.

> No required facilities

Prerequisites:

- All of the following:
  - Aviation - Flight 25 (LDC2351)

Versions Available: (Each version must be locally approved by Board Motion prior to offering to students.)

Credit Level	First School Year	Last School Year
3	2023-2024	2026-2027

Curriculum Outline

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
1	**Topic** Aviation Policies and Regulations	✓	✓	✓
1.1	**General Outcome** What are the laws and procedures governing aviation?	✓	✓	✓
1.1.1	**Specific Outcome** List general provisions and requirements for a private pilot's licence record keeping and documentation practices	✓		
1.1.2	**Specific Outcome** Recognize identification and registration standards for aircraft	✓		
1.1.3	**Specific Outcome** Identify and list aerodrome and airport standards for markers and markings; Wind direction indicators; Lighting; Prohibitions; and Fire prevention	✓		
1.1.4	**Specific Outcome** Identify requirements for personnel licensing and training for a private pilot's license medical requirements	✓		
1.1.5	**Specific Outcome** Recognize general operation and flight rules for airspace structure, classification and use; general aircraft operating procedures; emergency requirements; flight preparation, plans and itineraries; pre-flight fuel requirements; operation at or in the vicinity of an aerodrome; visual flight rules; radio communications; emergency communications and security; general aircraft documentation; aircraft equipment requirements; aircraft maintenance requirements; and keeping technical records	✓		
1.1.6	**Specific Outcome** Define Transportation Safety Board of Canada reporting protocols	✓		
1.1.7	**Specific Outcome** Demonstrate air traffic services and procedures.	✓		
1.1.8	**Specific Outcome** Define commercial aircraft operational and emergency equipment requirement for power driven aircraft; survival equipment for flights over land and water life preservers and flotation devices		✓	
1.1.9	**Specific Outcome** Describe and define special flight operation for special aviation events; parachuting; private operator passenger operation; and aircraft requirements for commercial operation		✓	
1.1.10	**Specific Outcome** Describe and define commercial air service regulations for flight time limits and rest periods; aerial work operations; air taxi operations; and aircraft maintenance requirements		✓	

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
1.1.11	**Specific Outcome** Define the differences in regulations between a private and commercial pilot in general provisions required to document and operate a commercial aircraft; defining the laws regarding registration and identification of commercial aircraft; and identifying requirements regarding licensing, training		✓	
1.1.12	**Specific Outcome** Describe the differences in regulations between a private and commercial pilot's airspace classification and regulations for operating in that airspace; identify commercial pilot regulations around crew fitness, icing regulations, and procedures and regulations for cruising altitudes.		✓	
1.1.13	**Specific Outcome** Define the differences in regulations between a private and commercial pilot for filing a flight itinerary and arrival plan for a commercial aircraft; regulations for operating a commercial aircraft in the vicinity of an aerodrome; being able to describe Visual Flight Rules; and Air Defense Identification Zone (ADIZ) emergency communications		✓	
1.1.14	**Specific Outcome** Define the differences between a private and commercial pilot's regulations for commercial aircraft operational and emergency equipment requirements including requirements for power driven aircraft and survival equipment for flights over land and water including life preservers and flotation devices		✓	
1.1.15	**Specific Outcome** Define requirements for the Instrument Rating – Aeroplane Instrument Flight Rules (IFR) licensing and training requirements			✓
1.1.16	**Specific Outcome** Describe general operating and flight rules for Instrument Rating - Aeroplane Instrument Flight Rules (IFR) on airspace structures, classification and use; operating and flight rules; operational and emergency equipment regulations; flight preparation, plans and itineraries; operation in the vicinity of an aerodrome; instrument flight rules; radio communications; aircraft requirements; air traffic services; Canadian airspace; route and flight planning			✓
1.1.17	**Specific Outcome** Describe and define general operating and flight rules for Instrument Rating – Aeroplane IFR procedures for departures, En route, holding, approach and Canadian air pilot definitions; and emergencies			✓
2	**Topic** Aviation Navigation and Communication	✓	✓	✓
2.1	**General Outcome** How do concepts of navigation and radio aids influence operation of an aeroplane?	✓	✓	✓
2.1.1	**Specific Outcome** Define Meridian; Prime Meridian; Longitude; Equator; Latitude; Rhumb Line/Great Circle; Variation; Isogonal; Agonic Line; Deviation; Track; Heading, Airspeed; Ground Speed; Air Position; Ground Position; Bearing; Wind Velocity; Drift	✓		

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
2.1.2	**Specific Outcome** Interpret and use aviation maps and charts: Characteristics of projections; Vertex Time of Arrival (VTA); Visual Navigation Chart (VNC); Topographical symbols; Elevation and contours; Aeronautical information; Scale and units of measurement; Locating position by latitude and longitude	✓		
2.1.3	**Specific Outcome** Demonstrate how to use time and longitude on the 24-hour system; Time zones; Conversion of Coordinated Universal Time (UTC) to local and vice versa	✓		
2.1.4	**Specific Outcome** Demonstrate pilot navigation techniques for use of aeronautical charts; measurement of track and distance; Map reading; Setting heading-visual angle of departure; Check points and pin-points; Ground speed checks and Estimated Time of Arrival (ETA) revisions; Track made good; Determined drift by 10-degree lines; 1 in 60 rule; Visual alteration method of correcting to track; Diversion to alternate; Return to departure point; Low level navigation	✓		
2.1.5	**Specific Outcome** Demonstrate pilot navigation techniques for deduced reckoning, in-flight log and mental calculations, procedures when lost, air and ground position, variation / deviation; true/magnetic track; true/magnetic compass headings, indicated/calibrated airspeed; true airspeed, ground speed, compass errors; and radio communications	✓		
2.1.6	**Specific Outcome** Demonstrate the use of navigation computers to determine Heading and true airspeed; True track and ground speed; and Magnetic heading and magnetic track	✓		
2.1.7	**Specific Outcome** Demonstrate pre-flight preparation techniques for factors affecting choice of route; map preparation; meteorological information; selection of checkpoints; flight log forms; documents to be carried in aircraft	✓		
2.1.8	**Specific Outcome** Demonstrate correct use of an aircraft radio	✓		
2.1.9	**Specific Outcome** Demonstrate the basic use of Very High Frequency (VHF) Omnidirectional range (VOR)	✓		
2.1.10	**Specific Outcome** Demonstrate the basic use of an automatic direction finder Automatic Direction Finder (ADF)	✓		
2.1.11	**Specific Outcome** Demonstrate the use of global navigation satellite system (GNSS) / Global Positioning System (GPS)	✓		
2.1.12	**Specific Outcome** Demonstrate the use of other radio aids transponders; Emergency Locator Transmitter (ELT); VHF Direction Finding (DF) assistance; and Airport Surveillance Radar (ASR)		✓	

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
2.1.13	**Specific Outcome** Interpret and use navigation maps and charts for Navigation aids; and En route low altitude charts		✓	
2.1.14	**Specific Outcome** Demonstrate how to use time and longitude for morning and evening twilight charts		✓	
2.1.15	**Specific Outcome** Demonstrate pilot navigation techniques for use of position lines to obtain a fix; double track error method to regain track; and sum of opening and closing angles to destination		✓	
2.1.16	**Specific Outcome** Demonstrate the use of navigation computers to determine applying the wind; pressure/density of true altitudes; indicated/calibrated /true airspeed; time/ground speed/distance; fuel consumption and conversions; and climbs/descents		✓	
2.1.17	**Specific Outcome** Demonstrate pre-flight preparation techniques to Notice to Air Missions (NOTAMs); fuel requirements; weight and balance; use of Canada flight supplement; flight plans/itineraries; aircraft serviceability		✓	
2.1.18	**Specific Outcome** Identify the operational limitations of aircraft radios		✓	
2.1.19	**Specific Outcome** Demonstrate advanced understanding of Very High Frequency (VHF) Omnidirectional range (VOR) for serviceability check; interpretation/orientation/homing; intercepting predetermined radials and tracking; position lines and fixes		✓	
2.1.20	**Specific Outcome** Demonstrate advanced understanding of an automatic direction finder Automatic Direction Finder (ADF) for serviceability check; intercepting predetermined tracks and tracking; position lines and fixes; and relative bearings/conversion to magnetic/true bearings		✓	
2.1.21	**Specific Outcome** Demonstrate the use of other radio aids - distance measuring equipment		✓	
2.1.22	**Specific Outcome** Demonstrate understanding of advanced instrumentation, navigation and radio aids as they pertain to Instrument Flight Rules (IFR) flying for Pitot static system; Pitot static instruments; Gyroscopic systems and instruments; Magnetic compass; Very High Frequency Omni-Directional Range (VOR); Automatic Direction Finder (ADF); Instrument Landing system (ILS); global navigation satellite system (GNSS); Transponder; and other systems			✓
2.1.23	**Specific Outcome** Describe and define advanced topics in human factors and airmanship as they pertain to Instrument Flight Rules (IFR) flying on aviation physiology; aviation psychology; pilot-equipment/material relationship; controlled flight into terrain; and threat and error management			✓

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
3	**Topic** Aeronautical terminology and weather patterns	✓	✓	✓
3.1	**General Outcome** How does meteorology affect the operation of an aeroplane in flight?	✓	✓	✓
3.1.1	**Specific Outcome** Describe the following meteorological concepts as they pertain to flying earth's atmosphere; atmospheric pressure; meteorological aspects of altimetry; temperature; moisture; stability and instability; clouds; surface based layers; turbulence; wind; air masses; fronts; aircraft icing; thunderstorms; hurricanes and tornadoes	✓		
3.1.2	**Specific Outcome** Describe meteorological services available to pilots	✓		
3.1.3	**Specific Outcome** Describe and use aviation weather reports and aviation forecasts	✓		
3.1.4	**Specific Outcome** Describe and use weather maps and prognostic charts	✓		
3.1.5	**Specific Outcome** Identify considerations when flying from high to low pressure and temperature areas and vice versa		✓	
3.1.6	**Specific Outcome** Define saturated/dry adiabatic lapse rate; cloud associated precipitation and turbulence; fog formation in surface-based layers; orographic turbulence; wind shear including types/causes; wind veer/back; air mass formation/classification; front cross sections, cold fronts, warm fronts, TROugh of Warm Air Aloft (TROWAL) and upper fronts; thunderstorm hazards including updrafts, downdrafts, gust fronts/downbursts/ microbursts/hail/lightning		✓	
3.1.7	**Specific Outcome** Decode aviation weather reports, forecasts, weather maps, and prognostic charts		✓	
3.1.8	**Specific Outcome** Define and describe characteristics of stable/unstable air; lifting processes; and subsidence/convergence		✓	
3.1.9	**Specific Outcome** Define how meteorological phenomena affect Instrument Flight Rules (IFR) flying for the fundamentals of weather; icing; turbulence; and thunderstorms			✓
3.1.10	**Specific Outcome** Demonstrate correct reading of aviation weather reports; aviation forecasts; weather maps and prognostic charts; and weather interpretation			✓

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
4	**Topic** Airplane Structure, Instrumentation, Operation and Principles of Flight	✓	✓	
4.1	**General Outcome** How does General Aeronautical Knowledge inform the practice of operating an aircraft?	✓	✓	
4.1.1	**Specific Outcome** Describe airframes; engines; landing gear, flaps and brakes; carburation; fuel injection; electrical systems; lubricating systems and oils; fuel systems and fuel; systems for oxygen and vacuum	✓		
4.1.2	**Specific Outcome** Demonstrate an understanding of the theory of flight for principles of flight; forces acting on an airplane; aerofoils; propellers; design of the wing; stability; and flight controls	✓		
4.1.3	**Specific Outcome** Demonstrate an understanding of Flight Instruments covering pilot static system; airspeed indicator; vertical speed indicator; altimeter/encoding altimeter; magnetic compass; gyroscope; heading indicator; attitude indicator; turn and bank indicator/turn co-ordinator; and basic instrument flying	✓		
4.1.4	**Specific Outcome** Define flight operations principles of general flight operation; use of performance charts; aircraft performance; weight and balance; wake turbulence; search and rescue; and aircraft critical surface contamination	✓		
4.1.5	**Specific Outcome** Describe human factors that may influence flying covering aviation physiology; the pilot and operating environment; aviation psychology; pilot-equipment/material relationship; interpersonal relations	✓		
4.1.6	**Specific Outcome** Describe turbo charging engines; effects of density altitude/humidity on engines; carburetor icing and use of carb heat; and fuel types, colour, handling when fueling aircraft, ground/bonding		✓	
4.1.7	**Specific Outcome** Describe relationship of lift and drag to angle of attack; Centre of Pressure of C of P; centrifugal/centripetal forces; relative airflow and angle of attack on airfoils; fixed/variable pitch propellers; and relationship of load factor to stalling speed		✓	
4.1.8	**Specific Outcome** Describe airspeed indicator errors/malfunctions; vertical speed indicator errors/malfunctions; altimeter/encoding altimeter errors/malfunctions; heading indicator errors/malfunctions; attitude indicator errors/malfunctions; and turn and bank indicator/turn coordinator errors/malfunctions		✓	
4.1.9	**Specific Outcome** Describe the effects of wind and wind shear; density altitude/humidity; and effects of change of weight or centre of gravity on performance		✓	

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
4.1.10	Specific Outcome Describe performance use of take off charts, cross wind charts; cruise charts; fuel burn charts, landing charts, Canadian Runway Friction Index (CFRI) performance tables and charts		✓	
4.1.11	Specific Outcome Describe weight and balance concepts for locating Center of Gravity (CG), Centre of Gravity (CG) limits, load adjustment, cargo tie-down/passenger loading; Emergency Locator Transmitter (ELT); and effects of aircraft critical surface contamination in relation to performance, clean aircraft concept, and pre-takeoff inspection		✓	
4.1.12	Specific Outcome Describe hypoxia/hyperventilation; effects of medications and substance abuse on a pilot; toxic hazards including carbon monoxide		✓	
5	Topic Aeronautical Flight Safety	✓	✓	✓
5.1	General Outcome What are the skills and procedures required for the safe operation of an aeroplane in simulated flight?	✓	✓	✓
5.1.1	Specific Outcome Apply effective decision making that anticipates problems in advance, make appropriate inquiries and prioritizes tasks	✓	✓	✓
5.1.2	Specific Outcome Apply situational awareness to actively monitor and detect changes to weather conditions, aircraft systems, instruments and Air Traffic Control (ATC) communications	✓	✓	✓
5.1.3	Specific Outcome Apply effective workload management for eliminating distractions, organizing cockpit resources and recognizing signs of overload in self	✓	✓	✓
5.1.4	Specific Outcome Operation of Aircraft Systems: Demonstrate practical knowledge of General Aeronautical Knowledge while operating an aircraft in simulated flight	✓	✓	
5.1.5	Specific Outcome Taxiing: Demonstrate safe manoeuvring of the aircraft, avoid unnecessary interference with other aircraft and position the aircraft appropriately for wind conditions	✓		
5.1.6	Specific Outcome Demonstrate safe takeoff and landing procedures in a simple circuit	✓		
5.1.7	Specific Outcome Forced Landing: Demonstrate safe approach and landing in the event of engine failure		✓	
5.1.8	Specific Outcome Spiral: Demonstrate recognition of a spiral dive and execute a safe recovery to straight and level flight		✓	

Curriculum Elements		Aviation-Flight 15-3	Aviation - Flight 25-3	Aviation - Flight 35-3
5.1.9	**Specific Outcome** Short Field Takeoff: Demonstrate safe takeoff from a short field and clear an obstacle		✓	
5.1.10	**Specific Outcome** Precautionary Landing: Demonstrate safe evaluation and landing at an unfamiliar aerodrome or landing		✓	
5.1.11	**Specific Outcome** Diversion to an Alternate: Demonstrate a diversion to a suitable alternate destination using mental in-flight planning, dead reckoning, map reading and pilotage		✓	
5.1.12	**Specific Outcome** Instrument Flying: Demonstrate safe control of the aeroplane solely by reference to available flight instruments			✓
5.1.13	**Specific Outcome** Demonstrate a variety of flight maneuvers without visual feedback from instrument flying, techniques for safe takeoff and landing; forced landing; spiral; short field takeoff; and precautionary landing			✓
6	**Topic** Aviation Career Exploration	✓	✓	✓
6.1	**General Outcome** What are post-secondary and career opportunities in aviation?	✓	✓	✓
6.1.1	**Specific Outcome** Connect personal interests, values, resources, prior learning and experiences to future career and post-secondary choices in order to complete/update a personal inventory and create a connection between personal inventory and occupational choices	✓		
6.1.2	**Specific Outcome** Identify possible life roles related to the skills and content of this course to recognize and then analyze the opportunities and barriers in the immediate environment and identify potential resources to minimize barriers and maximize opportunities		✓	
6.1.3	**Specific Outcome** Create a transitional strategy to accommodate personal changes and build personal values to identify short-term and long-term goals and steps to achieve goals			✓