Grades 9 to 12
Pilot Ground School

Manitoba Technical-Vocational Curriculum Framework of Outcomes

Manitoba

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PILOT GROUND SCHOOL

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Technical-Vocational Education Overview

In 2013, Manitoba Education released the document *Technical-Vocational Education Overview*, available at www.edu.gov.mb.ca/k12/cur/teched/sy_tech_program.html to provide the philosophical and pedagogical underpinnings for curriculum development and the teaching of technical-vocational education (TVE) courses in Manitoba. This overview presents educators with the vision and goals of TVE in Manitoba.

Topics include the following:

- curriculum revitalization and renewal
- curriculum framework and implementation
- articulation of programming
- assessment and reporting
- safety
- employability/essential skills and career development
- sustainable development

TVE clusters of courses are designed to encourage students to explore career options in designated trades and trained occupations and to address labour shortages in these areas. The TVE curriculum includes course clusters for both *designated trades* (trades designated for apprenticeship training and certification by Apprenticeship Manitoba) and *trained occupations* (not designated as trades).

The TVE curriculum is significantly different from other subject areas, such as industrial arts. It has distinctive qualities which, when respected, will provide students with a uniquely valuable experience that they cannot receive from any other curriculum.

TVE gives students the opportunity to learn, from industry-certified teachers with industry experience, the theoretical and practical aspects of one specific trade or trained occupation in order to facilitate their transition from school to work or to post-secondary education in that trade or trained occupation (including journeyperson status from Apprenticeship Manitoba), or into an associated trade or occupation. This transition is accomplished by having students complete an entire TVE cluster of courses in a setting that, as much as possible, emulates an actual workplace.

The TVE curriculum includes Grades 9 to 12 courses in a variety of areas, including pilot ground school.

Pilot Ground School Overview

Grades 9 to 12 Pilot Ground School: Manitoba Technical-Vocational Curriculum Framework of Outcomes identifies the goals, general learning outcomes (GLOs), and specific learning outcomes (SLOs) for nine pilot ground school courses. This framework is intended for use in all Manitoba schools teaching pilot ground school courses as part of the Senior Years Technology Education Program.

Pilot Ground School as a TVE Cluster

Grades 9 to 12 Pilot Ground School: Manitoba Technical-Vocational Curriculum Framework of Outcomes has been developed to teach students the knowledge, skills, and attitudes required for the **ground school component** of their Private Pilot Licence, administered by Transport Canada. Students will learn all of the topics mentioned in *Study and Reference Guide for Written Examinations for the Private Pilot Licence – Aeroplane*, Fifth Edition, November 2006, which is found at https://www.tc.gc.ca/Publications/en/TP12880/PDF/HR/TP12880E.pdf.

Please note that this cluster of courses does **not** include the flight instruction that students must successfully complete in order to earn their Private Pilot Licence. Students who complete this eight-course cluster, and meet Transport Canada's other requirements (including the minimum number of hours of flight instruction) are then qualified to write the Transport Canada Private Pilot Licence—Aeroplane Category written exam.

Students can complete the requirements for their Private Pilot Licence by successfully completing their flight instruction through one of the Flight Training Units approved by Transport Canada, found throughout Manitoba. Students can begin their flight instruction at any time, including while enrolled in this cluster, as long as they meet the Transport Canada requirements.

Career and Educational Opportunities

A student who has completed the pilot ground school cluster can seek entry-level employment in the aviation industry. Students also learn about various sectors in the aviation industry, including a variety of aviation careers, such as commercial pilot, air traffic controller, meteorologist, aircraft maintenance engineer, and aeronautical engineer.

After successfully completing the cluster, students will have obtained knowledge and skills that will ease their transition to post-secondary educational opportunities in aviation. These include a Bachelor of Science degree in aviation or meteorology, an air traffic control diploma, and engineering programs in maintenance and aeronautics.

Implementation of the Pilot Ground School Courses

To receive a Senior Years Technology Education Program (SYTEP) diploma, a student must complete a minimum of eight departmentally developed courses from an approved TVE cluster, together with 17 compulsory credits and 5 optional credits.

Students must complete the eight mandatory courses from the Grades 10 to 12 pilot ground school curriculum to earn their SYTEP diploma. Students do not need to complete the optional Grade 9 course in order to graduate from SYTEP.

Qualifications of Pilot Ground School Teachers

Manitoba Education and Training allows only vocationally certified teachers to teach TVE courses, including the ones in this pilot ground school cluster.

Vocational certification includes three components:

- **Industry Certification:** Pilot ground school teachers need to have trained as pilots, so that they can share that experience with their students. Teachers hold either
  - a commercial pilot's licence, or
  - a private pilot's licence
- **Industry Experience:** Pilot ground school teachers need to have been employed as commercial pilots or in other careers within the aviation industry—eligible positions include aircraft maintenance engineer (AME), avionics, ground crew, mechanics, air traffic controller, and flight instructor—for at least six years. This will enable them to share their industry experience with students, which will help to prepare students for working in the aviation industry.
- **Technical Vocational Teaching Certificate:** TVE teachers are required to have a technical vocational teaching certificate, obtained by completing Red River College's one-year Technical Vocational Teacher Education diploma program. For information about this program, see https://me.rrc.mb.ca/Catalogue/ProgramInfo.aspx?ProgCode=TECVF-DP&RegionCode=WPG (full-time program) or https://me.rrc.mb.ca/Catalogue/ProgramInfo.aspx?ProgCode=TECVP-DP&RegionCode=WPG (part-time program).

Employing only vocationally certified teachers to teach TVE courses preserves the integrity of TVE programming by ensuring that teachers are able to share their first-hand experience working in the aviation industry, and their familiarity with industry certification and health and safety requirements. Students receive instruction from somebody who has been involved in the industry.

School boards risk significant liability if they employ non-vocationally certified teachers to teach TVE courses. Vocational certification confirms that a teacher has the requisite skills and knowledge to teach in a way that reduces the risk of accident and injury. For further information, see "Professional Certification: Technical Vocational Teacher" on the Manitoba Education and Training website at www.edu.gov.mb.ca/k12/profcert/certificates/vocational.html.

Pilot Ground School Goals and General Learning Outcomes (GLOs)

The learning outcomes for each course in the pilot ground school cluster are based on the following curriculum goals and general learning outcomes (GLOs). **Please note that some courses do not address all of these goals and GLOs.**

Goal 1: Describe and apply appropriate **health** and **safety** practices.

GLO 1.1: Describe and apply appropriate **health** and **safety** practices.

Goal 2: Demonstrate an understanding of **human factors** in aviation.

GLO 2.1: Demonstrate an understanding of **human factors** in aviation.

Goal 3: Demonstrate the use and management of **materials, tools,** and **equipment**.

GLO 3.1: Demonstrate the use and management of **materials, tools,** and **equipment**.

Goal 4: Demonstrate an understanding of **flight** and **aerodynamics**.

GLO 4.1: Demonstrate an understanding of **flight** and **aerodynamics**.

Goal 5: Demonstrate an understanding of **engines, airframes, systems,** and **instruments**.

GLO 5.1: Demonstrate an understanding of **engines, airframes, systems,** and **instruments**.

Goal 6: Demonstrate an understanding of **meteorology** and the atmosphere.

GLO 6.1: Demonstrate an understanding of **meteorology** and the atmosphere.

Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**.

GLO 7.1: Demonstrate an understanding of **navigation**.

GLO 7.2: Demonstrate an understanding of **aerodromes** and **airports**.

Goal 8: Describe and apply transferable **cross-curricular** knowledge and skills (of literacy, numeracy, and the sciences) as they apply to aviation.

GLO 8.1: Describe and apply **literacy** knowledge and skills related to aviation.

GLO 8.2: Describe and apply **numeracy** knowledge and skills related to aviation.

GLO 8.3: Describe and apply knowledge and skills from the **sciences** that relate to aviation.

Goal 9: Demonstrate an understanding of the **ethical and legal standards** that pertain to aviation.

GLO 9.1: Demonstrate an understanding of the **ethical standards** that pertain to aviation.

GLO 9.2: Demonstrate an understanding of **air law**.

Goal 10: Demonstrate **employability skills**.

GLO 10.1: Demonstrate basic **employability skills**.

GLO 10.2: Demonstrate **critical thinking** skills.

GLO 10.3: Demonstrate an understanding of **culture** in the workplace.

Goal 11: Demonstrate an understanding of **sustainability** as it pertains to aviation.

GLO 11.1: Demonstrate an understanding of the impact of the aviation industry on **human sustainability** and on the health and well-being of aviation workers and passengers.

GLO 11.2: Demonstrate an understanding of the aviation industry's **sustainability practices** and impact on the environment.

Goal 12: Demonstrate an understanding of the **scope** of, and **education and employment opportunities** in, the aviation industry.

GLO 12.1: Demonstrate an understanding of the **scope** of the aviation industry.

GLO 12.2: Demonstrate an understanding of **education and employment opportunities** in the aviation industry.

Goal 13: Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**.

GLO 13.1: Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**.

Specific Learning Outcomes (SLOs)

Grades 9 to 12 Pilot Ground School: Manitoba Technical-Vocational Curriculum Framework of Outcomes identifies specific learning outcomes (SLOs) for use in all Manitoba schools teaching Grades 9 to 12 pilot ground school as part of the Senior Years Technology Education Program. SLO statements define what students are expected to achieve by the end of a course.

It is essential for students to learn and to demonstrate safety practices and employability skills; therefore, some SLOs related to health and safety, as well as to employability skills, are repeated in several courses.

Please note that SLOs are not identified for the goals and GLOs that are not addressed in a given course.

Course Descriptions

9196 Exploration of Aviation — 15S/15E/15M, 10S/10E/10M

This optional course can be taught as either a half- or a full-credit course. Students have the opportunity to explore the field of aviation, focusing on ground school training for pilots.

9197 Introduction to Aviation — 20S/20E/20M

Students are introduced to the field of aviation. They explore a variety of topics, including aerodynamics, aircraft mechanics, air law, meteorology, navigation, and human factors.

9198 Principles of Flight — 30S/30E/30M

In this largely theoretical course, students focus on aerodynamics, theory of flight, mechanics of aircraft, airframes, air law, radio theory, and aerodromes and airports, as well as engines, systems, and instruments used in aviation.

9199 Meteorology and Navigation — 30S/30E/30M

Students will develop a theoretical and practical understanding of meteorology, and its application to aviation. They will also develop a theoretical and practical understanding of navigation, especially as it relates to flight planning.

9201 Flight Simulation Lab — 30S/30E/30M

Students focus on following correct procedures while performing flight training exercises as they fly simulated aircraft. This provides them with the opportunity to incorporate the theory that they have previously learned. As part of their experience flying simulated aircraft, students learn required radio procedures.

9202 Human Factors 40S/40E/40M

This course focuses on human factors in aviation, including the pilot and the operating environment, aviation psychology, pilot decision making, and aviation physiology.

9203 Advanced Aviation 40S/40E/40M

Students gain an advanced understanding of navigation technologies, aerodynamics, the relationship between meteorological conditions and aircraft performance, and air law.

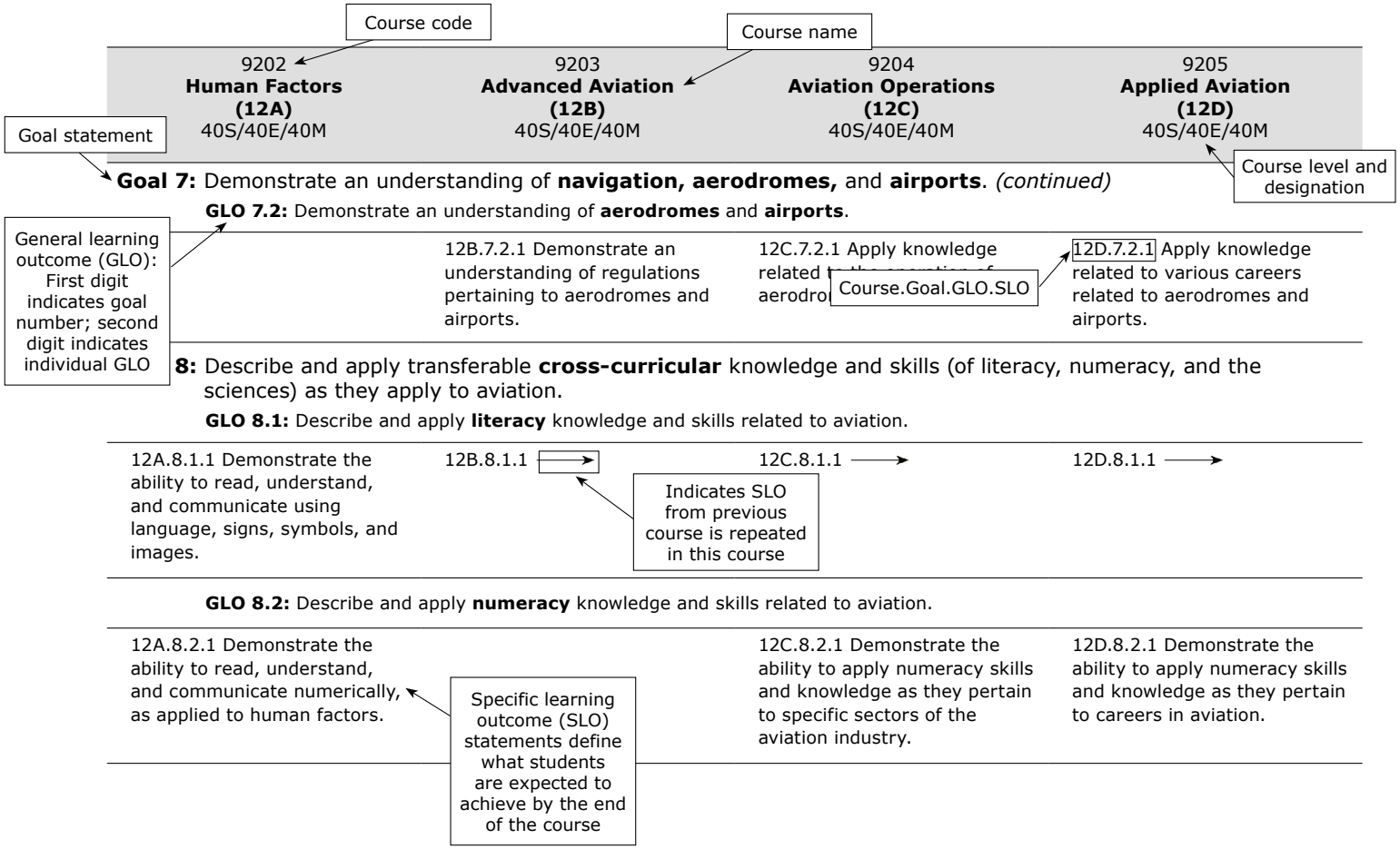
9204 Aviation Operations 40S/40E/40M

Students develop an understanding of all sectors of the aviation industry, and focus on those sectors that they are interested in pursuing. They will have the opportunity to discover the aviation-related facilities in their area, such as air operators, airports and aerodromes, repair and maintenance facilities, and control towers and centres.

9205 Applied Aviation 40S/40E/40M

Students develop an understanding of careers in the aviation industry, including training and employment opportunities, and focus on those careers that they are interested in pursuing. Students will meet with people who work in specific aviation careers. They will also develop a resumé as part of their plan to obtain their preferred aviation-related career.

Guide to Reading Pilot Ground School Goals and Learning Outcomes



GRADES 9 TO 11
PILOT GROUND SCHOOL

General and Specific Learning
Outcomes by Goal

Grades 9 to 11 Pilot Ground School: General and Specific Learning Outcomes by Goal

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 1: Describe and apply appropriate **health** and **safety** practices.				
GLO 1.1: Describe and apply appropriate **health** and **safety** practices.				
9.1.1.1 Demonstrate an understanding of safe practices.	10.1.1.1 →	11A.1.1.1 →	11B.1.1.1 →	11C.1.1.1 →
9.1.1.2 Demonstrate adherence to safe practices.	10.1.1.2 →	11A.1.1.2 →	11B.1.1.2 →	11C.1.1.2 →
Goal 2: Demonstrate an understanding of **human factors** in aviation.				
GLO 2.1: Demonstrate an understanding of **human factors** in aviation.				
	10.2.1.1 Demonstrate an awareness of the importance of safety in the aviation industry.	11A.2.1.1 Demonstrate an understanding of the relationship between flight safety and the principles of flight, including aerodynamics and forces acting on an aircraft.	11B.2.1.1 Demonstrate an understanding of flight safety as it relates to weather.	11C.2.1.1 Demonstrate an understanding of flight safety procedures, including checklists.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 2: Demonstrate an understanding of **human factors** in aviation. *(continued)* **GLO 2.1:** Demonstrate an understanding of **human factors** in aviation. *(continued)*				
	10. 2.1.2 Demonstrate an awareness of human factors and their place in aviation.			11C.2.1.2 Demonstrate the ability to follow aircraft safety procedures, including the use of checklists.
Goal 3: Demonstrate the use and management of **materials, tools,** and **equipment**. **GLO 3.1:** Demonstrate the use and management of **materials, tools,** and **equipment**.				
9.3.1.1 Demonstrate the appropriate use and management of materials, tools, and equipment.	10.3.1.1 ⟶	11A.3.1.1 ⟶	11B.3.1.1 ⟶	11C.3.1.1 ⟶
9.3.1.2 Demonstrate the ability to follow operating procedures when using simulators.	10.3.1.2 ⟶	11A.3.1.2 ⟶	11B.3.1.2 ⟶	11C.3.1.2 ⟶

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 4: Demonstrate an understanding of **flight** and **aerodynamics**. **GLO 4.1:** Demonstrate an understanding of **flight** and **aerodynamics**.				
9.4.1.1 Demonstrate an awareness of aerodynamics and its relationship to flight.	10.4.1.1 ⟶	11A. 4.1.1 ⟶		11C.4.1.1 Demonstrate an understanding of aerodynamics and its relationship to flight while flying a simulated aircraft.
9.4.1.2 Demonstrate an awareness of the theory of flight, including Bernoulli's principle.	10.4.1.2 ⟶	11A.4.1.2 ⟶		11C.4.1.2 Demonstrate an understanding of the theory of flight while flying a simulated aircraft.
9.4.1.3 Demonstrate an awareness of the four forces that act on an airplane: thrust, drag, weight, and lift.	10.4.1.3 ⟶	11A.4.1.3 Demonstrate an understanding of the four forces that act on an airplane (thrust, drag, weight, and lift), including the interaction among the forces, and demonstrate the ability to manipulate those forces.		11C.4.1.3 Demonstrate an understanding of the four forces that act on an airplane (thrust, drag, weight, and lift), and the ability to manipulate those forces while flying a simulated aircraft.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 4: Demonstrate an understanding of **flight** and **aerodynamics**. *(continued)* **GLO 4.1:** Demonstrate an understanding of **flight** and **aerodynamics**. *(continued)*				
9.4.1.4 Demonstrate an awareness of the following: wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls.	10.4.1.4 ⟶	11A.4.1.4 Demonstrate an understanding of the following: wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls.		11C.4.1.4 Demonstrate an understanding of wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls, and demonstrate the ability to manipulate them while flying a simulated aircraft.
	10.4.1.5 Demonstrate an awareness of the **relationships** among the following: wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls.	11A.4.1.5 Demonstrate an understanding of the **relationships** among the following: wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls.		11C.4.1.5 Demonstrate an understanding of the **relationships** among wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls, and demonstrate the ability to manipulate those relationships while flying a simulated aircraft.

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Goal 4: Demonstrate an understanding of **flight** and **aerodynamics**. *(continued)* **GLO 4.1:** Demonstrate an understanding of **flight** and **aerodynamics**. *(continued)*				
	10.4.1.6 Use a model airplane to explain the principles of flight.	11A.4.1.6 Demonstrate an understanding of torque, slipstream, gyroscopic effect, and asymmetric thrust.		11C.4.1.6 Demonstrate the ability to recognize torque, slipstream, gyroscopic effect, and asymmetric thrust, and to take appropriate action.
	10.4.1.7 Demonstrate the ability to apply Bernoulli's principle to aircraft design and construction.			
Goal 5: Demonstrate an understanding of **engines, airframes, systems,** and **instruments**. **GLO 5.1:** Demonstrate an understanding of **engines, airframes, systems,** and **instruments**.				
9.5.1.1 Demonstrate an awareness of engines.	10.5.1.1 Demonstrate an awareness of various types of engines.	11A.5.1.1 Demonstrate an understanding of various types of engines.	11B.5.1.1 Demonstrate an understanding and the use of navigation instruments.	11C.5.1.1 Demonstrate the ability to use controls, control surfaces, and instruments to fly a simulated aircraft.
9.5.1.2 Demonstrate an awareness of four-stroke internal combustion engines.	10.5.1.2 Demonstrate an awareness of the operation of two-stroke and four-stroke internal combustion engines.	11A.5.1.2 Demonstrate an understanding of the operation of two-stroke and four-stroke internal combustion engines.	11B.5.1.2 Demonstrate an understanding and the use of engine instruments.	

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 5: Demonstrate an understanding of **engines, airframes, systems,** and **instruments**. *(continued)* **GLO 5.1:** Demonstrate an understanding of **engines, airframes, systems,** and **instruments**. *(continued)*				
9.5.1.3 Demonstrate an awareness of airframes.	10.5.1.3 Demonstrate an awareness of various types of airframes.	11A.5.1.3 Demonstrate an understanding of various types of airframes.		
9.5.1.4 Demonstrate an awareness of fuel systems.	10.5.1.4 ⟶	11A.5.1.4 Demonstrate an understanding of aircraft systems.		
9.5.1.5 Demonstrate an awareness of controls and control surfaces.	10.5.1.5 ⟶	11A.5.1.5 Demonstrate an understanding of controls and control surfaces.		
9.5.1.6 Demonstrate an awareness of instruments.	10.5.1.6 ⟶	11A.5.1.6 Demonstrate an understanding and the use of navigation instruments. 11A.5.1.7 Demonstrate an understanding and the use of engine instruments.		

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Goal 6: Demonstrate an understanding of **meteorology** and the atmosphere.				
GLO 6.1: Demonstrate an understanding of **meteorology** and the atmosphere.				
	10.6.1.1 Demonstrate an awareness of the importance of meteorology in flight planning.		11B.6.1.1 Demonstrate an awareness of Earth's atmosphere, including atmospheric standards, composition, and physical properties. 11B.6.1.2 Demonstrate an awareness of weather forecasting, including types of forecasts and briefings.	
Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**.				
GLO 7.1: Demonstrate an understanding of **navigation.**				
9.7.1.1 Demonstrate an awareness of maps and charts.	10.7.1.1 Demonstrate an understanding of the use of maps and charts in aviation.		11B.7.1.1 Demonstrate an understanding of various map and chart projections.	11C.7.1.1 Demonstrate the ability to correct in-flight navigational errors.
9.7.1.2 Demonstrate an awareness of map and chart symbols and scales.	10.7.1.2 Demonstrate an understanding of map and chart symbols and scales.		11B.7.1.2 Demonstrate the ability to perform weight and balance calculations, using charts and graphs.	11C.7.1.2 Demonstrate the ability to locate one's position when lost.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**. *(continued)* **GLO 7.1:** Demonstrate an understanding of **navigation.** *(continued)*				
9.7.1.3 Demonstrate an awareness of the calculations related to time, speed, distance, and fuel consumption.	10.7.1.3 Demonstrate an understanding of and the ability to perform calculations related to time, speed, distance, and fuel consumption.		11B.7.1.3 Demonstrate the ability to correct in-flight navigational errors.	11C.7.1.3 Demonstrate the ability to use on-board navigational tools.
9.7.1.4 Demonstrate an awareness of flight planning.	10.7.1.4 Demonstrate an understanding of flight planning.		11B.7.1.4 Demonstrate the ability to locate one's position when lost.	
9.7.1.5 Demonstrate an awareness of flight logs.	10.7.1.5 Demonstrate the ability to create flight logs.		11B.7.1.5 Demonstrate the ability to use on-board navigational tools. 11B.7.1.6 Demonstrate the ability to respond appropriately when navigational tools fail. 11B.7.1.7 Demonstrate the ability to integrate weather data into flight planning.	

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Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**. *(continued)* **GLO 7.2:** Demonstrate an understanding of **aerodromes** and **airports**.				
9.7.2.1 Demonstrate an awareness of aerodromes and airports.	10.7.2.1 Demonstrate an awareness of aerodromes and airports, including the following features: ■ location ■ symbols ■ numbering of runways ■ identification codes	11A.7.2.1 Demonstrate an understanding of aerodromes and airports, including the following features: ■ location ■ symbols ■ numbering of runways ■ identification codes	11B.7.2.1 →	11C.7.2.1 Demonstrate an understanding of aerodromes and airports (including features such as location, symbols, numbering of runways, and identification codes), while flying simulated aircraft.
		11A.7.2.2 Demonstrate an understanding of operational procedures found in aircraft and aerodromes/airports.	11B.7.2.2 →	11C.7.2.2 Demonstrate the ability to follow appropriate operational procedures, including radio communication, between aircraft and aerodromes/airports while flying a simulated aircraft.

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Goal 8: Describe and apply transferable **cross-curricular** knowledge and skills (of literacy, numeracy, and the sciences) as they apply to aviation.				
GLO 8.1: Describe and apply **literacy** knowledge and skills related to aviation.				
9.8.1.1 Demonstrate an awareness of the vocabulary associated with aviation.	10.8.1.1 →	11A.8.1.1 Demonstrate an understanding of the vocabulary associated with the principles of flight.	11B.8.1.1 Demonstrate an understanding of the vocabulary associated with meteorology and navigation.	11C.8.1.1 Demonstrate an understanding of the vocabulary associated with flying a simulated aircraft.
GLO 8.2: Describe and apply **numeracy** knowledge and skills related to aviation.				
9.8.2.1 Demonstrate the ability to read, understand, and communicate numerically.	10.8.2.1 →	11A.8.2.1 Demonstrate the ability to read, understand, and communicate numerically, as it pertains to the theoretical principles of flight.	11B.8.2.1 Demonstrate the ability to read, understand, and communicate numerically, as it pertains to meteorology and navigation.	11C.8.2.1 Demonstrate the ability to read, understand, and communicate numerically, as it pertains to flight.
9.8.2.2 Apply numeracy skills and knowledge to aviation.	10.8.2.2 →	11A.8.2.2 Apply numeracy skills and knowledge to the theoretical principles of flight.	11B.8.2.2 Apply numeracy skills and knowledge to meteorology and navigation.	11C.8.2.2 Apply numeracy skills and knowledge to flight.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 8: Describe and apply transferable **cross-curricular** knowledge and skills (of literacy, numeracy, and the sciences) as they apply to aviation. *(continued)* **GLO 8.3:** Describe and apply knowledge and skills from the **sciences** that relate to aviation.				
9.8.3.1 Demonstrate an awareness of the scientific knowledge and skills that relate to aviation.	10.8.3.1 ⟶	11A.8.3.1 Demonstrate an awareness of the scientific knowledge and skills that relate to the principles of flight.	11B.8.3.1 Demonstrate an understanding of the relationship between meteorological conditions and aviation. 11B.8.3.2 Demonstrate an understanding of the scientific principles that relate to meteorology. 11B.8.3.3 Demonstrate an awareness of the scientific principles associated with navigation.	11C.8.3.1 Demonstrate an awareness of the scientific knowledge and skills that relate to flight.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 9: Demonstrate an understanding of the **ethical and legal standards** that pertain to aviation.				
GLO 9.1: Demonstrate an understanding of the **ethical standards** that pertain to aviation.				
	10.9.1.1 Demonstrate an awareness of ethics.	11A.9.1.1 Demonstrate an awareness of airmanship.		11C.9.1.1 Demonstrate airmanship while flying a simulated aircraft.
GLO 9.2: Demonstrate an understanding of **air law**.				
	10.9.2.1 Demonstrate an awareness of the importance of regulations, including those from Transport Canada, in the aviation industry.	11A.9.2.1 Demonstrate an understanding of the legal requirements related to aviation, including those from ■ Transport Canada ■ safety operating procedures from individual operators	11B.9.2.1 Demonstrate an understanding of air law related to meteorology and navigation.	11C.9.2.1 Demonstrate adherence to air law while flying a simulated aircraft.

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 10: Demonstrate **employability skills**.				
GLO 10.1: Demonstrate basic **employability skills**.				
9.10.1.1 Demonstrate regular and punctual attendance.	10.10.1.1 →	11A.10.1.1 →	11B.10.1.1 →	11C.10.1.1 →
9.10.1.2 Communicate respectfully and effectively with others.	10.10.1.2 →	11A.10.1.2 →	11B.10.1.2 →	11C.10.1.2 →
9.10.1.3 Take responsibility for own actions.	10.10.1.3 →	11A.10.1.3 →	11B.10.1.3 →	11C.10.1.3 →
9.10.1.4 Demonstrate adaptability, initiative, and effort.	10.10.1.4 →	11A.10.1.4 →	11B.10.1.4 →	11C.10.1.4 →
9.10.1.5 Demonstrate teamwork skills.	10.10.1.5 →	11A.10.1.5 →	11B.10.1.5 →	11C.10.1.5 →
9.10.1.6 Demonstrate the ability to stay on task and use time effectively.	10.10.1.6 →	11A.10.1.6 →	11B.10.1.6 →	11C.10.1.6 →
9.10.1.7 Demonstrate the responsible use of wireless communication devices.	10.10.1.7 →	11A.10.1.7 →	11B.10.1.7 →	11C.10.1.7 →

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 10: Demonstrate **employability skills**. *(continued)*				
GLO 10.2: Demonstrate **critical thinking** skills.				
	10.10.2.1 Demonstrate an awareness of the importance of critical thinking in the aviation industry.	11A.10.2.1 Demonstrate the knowledge and skills required to solve complex problems related to the principles of flight.	11B.10.2.1 Demonstrate the knowledge and skills required to solve complex problems related to meteorology and navigation.	11C.10.2.1 Demonstrate the knowledge and skills required to solve complex problems involved in flying a simulated aircraft.
GLO 10.3: Demonstrate an understanding of **culture** in the workplace.				
	10.10.3.1 Define *culture* and demonstrate an awareness of it.			
Goal 11: Demonstrate an understanding of **sustainability** as it pertains to aviation.				
GLO 11.1: Demonstrate an understanding of the impact of the aviation industry on **human sustainability** and on the health and well-being of aviation workers and passengers.				
9.11.1.1 Demonstrate an awareness of the contributions that aviation has made to society.	10.11.1.1 ⟶			

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 11: Demonstrate an understanding of **sustainability** as it pertains to aviation. *(continued)*				
GLO 11.2: Demonstrate an understanding of the aviation industry's **sustainability practices** and impact on the environment.				
	10.11.2.1 Demonstrate an awareness of the aviation industry's sustainability practices and impact on the environment.	11A.11.2.1 Demonstrate an awareness of aircraft fuel consumption and impact on the environment.	11B.11.2.1 ⟶	11C.11.2.1 ⟶
Goal 12: Demonstrate an understanding of the **scope** of, and **education and employment opportunities** in, the aviation industry.				
GLO 12.1: Demonstrate an understanding of the **scope** of the aviation industry.				
9.12.1.1 Demonstrate an awareness of the scope of the aviation industry locally, regionally, nationally, and internationally.	10.12.1.1 ⟶	11A.12.1.1 Demonstrate an awareness of the sectors of the aviation industry pertaining to instruments, engines, and airframes, both locally and regionally.		
GLO 12.2: Demonstrate an understanding of **education and employment opportunities** in the aviation industry.				
9.12.2.1 Demonstrate an awareness of education and employment opportunities in the aviation industry.	10.12.2.1 ⟶	11A.12.2.1 Demonstrate an awareness of education and employment opportunities pertaining to instruments, engines, and airframes, locally and regionally.	11B.12.2.1 Demonstrate an awareness of education and employment opportunities in meteorology.	

9196 **Exploration of Aviation (9)** 15S/15E/15M 10S/10E/10M	9197 **Introduction to Aviation (10)** 20S/20E/20M	9198 **Principles of Flight (11A)** 30S/30E/30M	9199 **Meteorology and Navigation (11B)** 30S/30E/30M	9201 **Flight Simulation Lab (11C)** 30S/30E/30M
Goal 13: Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**. **GLO 13.1:** Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**.				
9.13.1.1 Demonstrate an understanding of the evolution of aviation.	10.13.1.1 ⟶	11A.13.1.1 Demonstrate an understanding of the evolution of instruments, engines, and airframes, including the technological progression and emerging trends related to them.	11B.13.1.1 Demonstrate an understanding of the evolution of navigation and meteorology, including the technological progression and emerging trends related to them.	

GRADE 12
PILOT GROUND SCHOOL

General and Specific Learning
Outcomes by Goal

Grade 12 Pilot Ground School: General and Specific Learning Outcomes by Goal

9202 **Human Factors (12A)** 40S/40E/40M	9203 **Advanced Aviation (12B)** 40S/40E/40M	9204 **Aviation Operations (12C)** 40S/40E/40M	9205 **Applied Aviation (12D)** 40S/40E/40M
Goal 1: Describe and apply appropriate **health** and **safety** practices.			
GLO 1.1: Describe and apply appropriate **health** and **safety** practices.			
12A.1.1.1 Demonstrate an understanding of safe practices.	12B.1.1.1 ⟶	12C.1.1.1 ⟶	12D.1.1.1 ⟶
12A.1.1.2 Adhere to safe practices.	12B.1.1.2 ⟶	12C.1.1.2 ⟶	12D.1.1.2 ⟶
		12C.1.1.3 Demonstrate an understanding of health and safety practices as they pertain to specific sectors of the aviation industry.	12D.1.1.3 Demonstrate an understanding of health and safety practices as they pertain to specific careers in aviation.
GLO 2: Demonstrate an understanding of **human factors** in aviation.			
GLO 2.1: Demonstrate an understanding of **human factors** in aviation.			
12A.2.1.1 Demonstrate an understanding of the physical human factors as they relate to flight safety.		12C.2.1.1 Apply an understanding of human factors as they pertain to specific sectors of the aviation industry.	12D.2.1.1 Apply an understanding of human factors as they pertain to specific careers in aviation.

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
GLO 2: Demonstrate an understanding of **human factors** in aviation. *(continued)*			
GLO 2.1: Demonstrate an understanding of **human factors** in aviation. *(continued)*			
12A.2.1.2 Demonstrate an understanding of aviation physiology as it relates to flight safety.			
12A.2.1.3 Demonstrate an understanding of the pilot and the operating environment as they relate to flight safety.			
12A.2.1.4 Demonstrate an understanding of aviation psychology as it relates to flight safety.			
12A.2.1.5 Demonstrate an understanding of the pilot–equipment/materials relationship as it relates to flight safety.			
12A.2.1.6 Demonstrate an understanding of interpersonal relations as they relate to flight safety.			

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 3: Demonstrate the use and management of **materials, tools,** and **equipment**. **GLO 3.1:** Demonstrate the use and management of **materials, tools,** and **equipment**.			
12A.3.1.1 Demonstrate the appropriate use and management of materials, tools, and equipment.	12B.3.1.1 ⟶	12C.3.1.1 ⟶	12D.3.1.1 ⟶
Goal 4: Demonstrate an understanding of **flight** and **aerodynamics**. **GLO 4.1:** Demonstrate an understanding of **flight** and **aerodynamics**.			
	12B.4.1.1 Demonstrate an understanding of aircraft stability and controls.		
Goal 5: Demonstrate an understanding of **engines, airframes, systems,** and **instruments**. **GLO 5.1:** Demonstrate an understanding of **engines, airframes, systems,** and **instruments**.			
No applicable SLOs.			
Goal 6: Demonstrate an understanding of **meteorology** and the atmosphere. **GLO 6.1:** Demonstrate an understanding of **meteorology** and the atmosphere.			
	12B.6.1.1 Demonstrate an understanding of the effect of various atmospheric conditions on aircraft performance.		

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**. **GLO 7.1:** Demonstrate an understanding of **navigation**.			
	12B.7.1.1 Demonstrate an understanding of GPS and the app ForeFlight, and the ability to use them for navigational purposes. 12B.7.1.2 Demonstrate an understanding of a Very High–Frequency (VHF) Omnidirectional Range (VOR) system, and the ability to use it for navigational purposes. 12B.7.1.3 Demonstrate the ability to perform pre-flight preparations. 12B.7.1.4 Demonstrate an understanding of and the application of radio theory. 12B.7.1.5 Demonstrate an understanding of and the application of performance charts.		

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 7: Demonstrate an understanding of **navigation, aerodromes,** and **airports**. *(continued)*			
GLO 7.2: Demonstrate an understanding of **aerodromes** and **airports**.			
	12B.7.2.1 Demonstrate an understanding of regulations pertaining to aerodromes and airports.	12C.7.2.1 Apply knowledge related to the operation of aerodromes and airports.	12D.7.2.1 Apply knowledge related to various careers related to aerodromes and airports.
Goal 8: Describe and apply transferable **cross-curricular** knowledge and skills (of literacy, numeracy, and the sciences) as they apply to aviation.			
GLO 8.1: Describe and apply **literacy** knowledge and skills related to aviation.			
12A.8.1.1 Demonstrate the ability to read, understand, and communicate using language, signs, symbols, and images.	12B.8.1.1 →	12C.8.1.1 →	12D.8.1.1 →
GLO 8.2: Describe and apply **numeracy** knowledge and skills related to aviation.			
12A.8.2.1 Demonstrate the ability to read, understand, and communicate numerically, as applied to human factors.		12C.8.2.1 Demonstrate the ability to apply numeracy skills and knowledge as they pertain to specific sectors of the aviation industry.	12D.8.2.1 Demonstrate the ability to apply numeracy skills and knowledge as they pertain to careers in aviation.

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 8: Describe and apply transferable **cross-curricular** knowledge and skills (of literacy, numeracy, and the sciences) as they apply to aviation. *(continued)*			
GLO 8.3: Describe and apply knowledge and skills from the **sciences** that relate to aviation.			
12A.8.3.1 Demonstrate an understanding of scientific principles, including human anatomy and physiology, as they relate to human factors.		12C.8.3.1 Apply scientific skills and knowledge as they relate to specific sectors of the aviation industry.	12D.8.3.1 Apply scientific skills and knowledge as they relate to careers in aviation.
Goal 9: Demonstrate an understanding of the **ethical and legal standards** that pertain to aviation.			
GLO 9.1: Demonstrate an understanding of the **ethical standards** that pertain to aviation.			
12A.9.1.1 Demonstrate an understanding of the importance of treating others in an ethical manner.		12C.9.1.1 Demonstrate an understanding of the ethical standards found in specific sectors of the aviation industry.	12D.9.1.1 Demonstrate an understanding of the ethical standards found in specific careers in aviation.
GLO 9.2: Demonstrate an understanding of **air law**.			
12A.9.2.1 Demonstrate an understanding of the relationship between human factors and air law. 12A.9.2.2 Analyze accident reports and identify those air law violations that might have contributed to the incident.	12B.9.2.1 Demonstrate an understanding of air law as described in *Canadian Aviation Regulations (CARs)*.	12C.9.2.1 Demonstrate an understanding of the security considerations in various aviation facilities.	12D.9.2.1 Demonstrate an understanding of the security considerations related to specific careers in aviation.

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 10: Demonstrate **employability skills**. **GLO 10.1:** Demonstrate basic **employability skills**.			
12A.10.1.1 Demonstrate regular and punctual attendance.	12B.10.1.1 →	12C.10.1.1 →	12D.10.1.1 →
12A.10.1.2 Communicate respectfully and effectively with others.	12B.10.1.2 →	12C.10.1.2 →	12D.10.1.2 →
12A.10.1.3 Take responsibility for own actions.	12B.10.1.3 →	12C.10.1.3 →	12D.10.1.3 →
12A.10.1.4 Demonstrate adaptability, initiative, and effort.	12B.10.1.4 →	12C.10.1.4 →	12D.10.1.4 →
12A.10.1.5 Demonstrate teamwork skills.	12B.10.1.5 →	12C.10.1.5 →	12D.10.1.5 →
12A.10.1.6 Stay on task and use time effectively.	12B.10.1.6 →	12C.10.1.6 →	12D.10.1.6 →
12A.10.1.7 Demonstrate the responsible use of wireless communication devices.	12B.10.1.7 →	12C.10.1.7 →	12D.10.1.7 →

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 10: Demonstrate **employability skills**. *(continued)*			
GLO 10.2: Demonstrate **critical thinking** skills.			
12A.10.2.1 Read and analyze accident case study reports to determine how human factors might have contributed to the accident.		12C.10.2.1 Solve problems found in various sectors of the aviation industry.	12D.10.2.1 Solve problems related to various careers in aviation.
GLO 10.3: Demonstrate an understanding of **culture** in the workplace.			
12A.10.3.1 Demonstrate an understanding of workplace culture.		12C.10.3.1 Demonstrate an understanding of the workplace cultures related to various sectors of the aviation industry.	12D.10.3.1 Demonstrate an understanding of the workplace cultures related to various careers in aviation.
12A.10.3.2 Analyze accident reports and identify those workplace cultural factors that might have contributed to the incident.		12C.10.3.2 Interact respectfully with people from a variety of cultures.	

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 11: Demonstrate an understanding of **sustainability** as it pertains to aviation.			
GLO 11.1: Demonstrate an understanding of the impact of the aviation industry on **human sustainability** and on the health and well-being of aviation workers and passengers.			
12A.11.1.1 Demonstrate an understanding of those human factors that have long-lasting health implications for workers in the aviation industry.		12C.11.1.1 Demonstrate an understanding of those human factors that have long-lasting health implications for workers in various sectors in the aviation industry.	12D.11.1.1 Demonstrate an understanding of those human factors that have long-lasting health implications for workers in various careers in aviation.
GLO 11.2: Demonstrate an understanding of the aviation industry's **sustainability practices** and impact on the environment.			
		12C.11.2.1 Demonstrate an understanding of sustainability practices of specific sectors of the aviation industry, and their impact on the environment.	12D.11.2.1 Demonstrate an understanding of sustainability concerns related to specific careers in aviation.

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 12: Demonstrate an understanding of the **scope** of, and **education and employment opportunities** in, the aviation industry.			
GLO 12.1: Demonstrate an understanding of the **scope** of the aviation industry.			
		12C.12.1.1 Describe the scope of all sectors in aviation at the local and regional levels. 12C.12.1.2 Describe the scope of aviation at the national and international levels.	
GLO 12.2: Demonstrate an understanding of **education and employment opportunities** in the aviation industry.			
			12D.12.2.1 Demonstrate an understanding of educational and employment opportunities in aviation at the local, regional, and national levels. 12D.12.2.2 Demonstrate an awareness of educational and employment opportunities in aviation at the international level. 12D.12.2.3 Create a personal education plan to obtain a chosen aviation career.

9202 **Human Factors** **(12A)** 40S/40E/40M	9203 **Advanced Aviation** **(12B)** 40S/40E/40M	9204 **Aviation Operations** **(12C)** 40S/40E/40M	9205 **Applied Aviation** **(12D)** 40S/40E/40M
Goal 12: Demonstrate an understanding of the **scope** of, and **education and employment opportunities** in, the aviation industry. *(continued)* **GLO 12.2:** Demonstrate an understanding of **education and employment opportunities** in the aviation industry. *(continued)*			
			12D.12.2.4 Create a resumé and cover letter to obtain employment in aviation. 12D.12.2.5 Demonstrate the ability to participate in a job interview.
Goal 13: Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**. **GLO 13.1:** Demonstrate an understanding of the **evolution** of aviation, including its **technological progression and emerging trends**.			
12A.13.1.1 Demonstrate an understanding of the evolution of human factors, including technological progression and emerging trends.		12C.13.1.1 Demonstrate an understanding of the evolution of certain sectors of the aviation industry, including their technological progression and emerging trends.	12D.13.1.1 Demonstrate an understanding of the evolution of certain careers in aviation, including their technological progression and emerging trends.

BIBLIOGRAPHY

BIBLIOGRAPHY

MacDonald, A. F. (Sandy). *From the Ground Up*. 29th ed., Aviation Publishers Co. Ltd., 2011.

Manitoba Education. *Technical-Vocational Education Overview*. 2013. Available online at www.edu.gov.mb.ca/k12/cur/teched/sytep/docs/tve-overview.pdf.

Public Works and Government Services Canada. *Flight Training Manual*. 4th ed., Gage Educational Publishing Company and Transport Canada in co-operation with the Department of Public Works and Government Services, 1999.

Transport Canada. *Study and Reference Guide for Written Examinations for the Private Pilot Licence – Aeroplane*. 5th ed., November 2006. Available online at https://www.tc.gc.ca/Publications/en/TP12880/PDF/HR/TP12880E.pdf.

Transport Canada. *Transport Canada: Aeronautical Information Manual (TC AIM)*. VIP Pilot Centre Inc., October 12, 2017.

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