



9198

PRINCIPLES OF FLIGHT (11A)

30S/30E/30M

A Pilot Ground School Course



# 9198 PRINCIPLES OF FLIGHT (11A)

## 30S/30E/30M

### Course Description

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.

---

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

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

SLO 11A.1.1.1 Demonstrate an understanding of safe practices.

SLO 11A.1.1.2 Demonstrate adherence to safe practices.

---

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

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

SLO 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.

---

**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.**

SLO 11A.3.1.1 Demonstrate the appropriate use and management of materials, tools, and equipment.

SLO 11A.3.1.2 Demonstrate the ability to follow operating procedures when using simulators.

---

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

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

SLO 11A.4.1.1 Demonstrate an awareness of aerodynamics and its relationship to flight.

SLO 11A.4.1.2 Demonstrate an awareness of the theory of flight, including Bernoulli's principle.

- SLO 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.
- SLO 11A.4.1.4 Demonstrate an understanding of the following: wing design, lift, pressure differentials, angle of attack, centre of pressure, and stalls.
- SLO 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.
- SLO 11A.4.1.6 Demonstrate an understanding of torque, slipstream, gyroscopic effect, and asymmetric thrust.

---

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

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

- SLO 11A.5.1.1 Demonstrate an understanding of various types of engines.
- SLO 11A.5.1.2 Demonstrate an understanding of the operation of two-stroke and four-stroke internal combustion engines.
- SLO 11A.5.1.3 Demonstrate an understanding of various types of airframes.
- SLO 11A.5.1.4 Demonstrate an understanding of aircraft systems.
- SLO 11A.5.1.5 Demonstrate an understanding of controls and control surfaces.
- SLO 11A.5.1.6 Demonstrate an understanding and the use of navigation instruments.
- SLO 11A.5.1.7 Demonstrate an understanding and the use of engine instruments.

---

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

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

No applicable SLOs.

---

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

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

No applicable SLOs.

---

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

SLO 11A.7.2.1 Demonstrate an understanding of aerodromes and airports, including the following features:

- location
- symbols
- numbering of runways
- identification codes

SLO 11A.7.2.2 Demonstrate an understanding of operational procedures found in aircraft and aerodromes/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.

SLO 11A.8.1.1 Demonstrate an understanding of the vocabulary associated with the principles of flight.

---

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

SLO 11A.8.2.1 Demonstrate the ability to read, understand, and communicate numerically, as it pertains to the theoretical principles of flight.

SLO 11A.8.2.2 Apply numeracy skills and knowledge to the theoretical principles of flight.

---

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

SLO 11A.8.3.1 Demonstrate an awareness of the scientific knowledge and skills that relate to the principles of flight.

---

---

**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.

SLO 11A.9.1.1 Demonstrate an awareness of airmanship.

---

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

SLO 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
- 

**Goal 10:** Demonstrate **employability skills**.

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

SLO 11A.10.1.1 Demonstrate regular and punctual attendance.

SLO 11A.10.1.2 Communicate respectfully and effectively with others.

SLO 11A.10.1.3 Take responsibility for own actions.

SLO 11A.10.1.4 Demonstrate adaptability, initiative, and effort.

SLO 11A.10.1.5 Demonstrate teamwork skills.

SLO 11A.10.1.6 Demonstrate the ability to stay on task and use time effectively.

SLO 11A.10.1.7 Demonstrate the responsible use of wireless communication devices.

---

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

SLO 11A.10.2.1 Demonstrate the knowledge and skills required to solve complex problems related to the principles of flight.

---

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

No applicable SLOs.

---

**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.

No applicable SLOs.

---

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

SLO 11A.11.2.1 Demonstrate an awareness of aircraft fuel consumption 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.

SLO 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.

SLO 11A.12.2.1 Demonstrate an awareness of education and employment opportunities pertaining to instruments, engines, and airframes, locally and regionally.

---

**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**.

SLO 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.

---

