



THEORY OF FLIGHT

Grade Ten Curriculum - Workshop Modules

HALF DAY – MORNING TOUR - (9:30am to 12:00am)

SCHEDULE: (Grade 10)

(Maximum 35 Students)

9:15am Arrive

9:30 – 9:40 Introduction and House Keeping topics to whole Group (10 minutes).

9:45 – 10:25 Theory of Flight, Bernoulli's Principle, parts of plane and function to small group (40 minutes)

- Review four forces: Thrust, Drag, Lift, Gravity.
- Aerodynamics in Planes: wing design creating high and low pressure, Bernoulli's Principle.
- Air pressure / altitude in relationship to force and motion.
- Aviation Weather:
 1. Cold Front/ Warm Front.
 2. High Pressure vs Low Pressure.
 3. What is bad weather for flying? VFR vs IFR.
 4. Weather Maps/Charts.
 5. Weather Forecast Technology, Weather Radar.
- Importance of Weight and balance – Flight Performance.
- Careers in aviation industry.

10:30 – 11:10 Tour aircraft and other artefacts, rivet display, and plane coverings to small group (40) minutes.

- Explain British Commonwealth Air Training Program.
- Tour planes: Nieuport XI, Tiger Moth, Chipmunk, Cornell, Harvard, Tracker, DC 3, T33, Cessna Skymaster.
- Rivet display and plane coverings.
- Artefacts: engines, instruments.

11:15 to 11:55 Flight simulator small group (40 minutes).

12:05 Depart.

Science Ten Learning Indicators and Outcomes

SCI10-C11: b, f, i

SCI10-FM1: c, e, f

SCI10-FM4: d, e, g



THEORY OF FLIGHT

Grade Ten Curriculum - Workshop Modules

HALF DAY – AFTERNOON TOUR - (1:00am – 3:30am)

SCHEDULE: (Grade 10)

(Maximum 35 Students)

12:15	Arrive
12:35 – 12:45	Introduction and House Keeping topics to whole Group (10 minutes).
12:50 – 1:20	Theory of Flight, Bernoulli's Principle, parts of plane and function to small group (30 minutes). <ul style="list-style-type: none">• Review four forces: Thrust, Drag, Lift, Gravity.• Aerodynamics in Planes: wing design creating high and low pressure, Bernoulli's Principle.• Air pressure / altitude in relationship to force and motion.• Aviation Weather:<ol style="list-style-type: none">1. Cold Front/ Warm Front.2. High Pressure vs Low Pressure.3. What is bad weather for flying? VFR vs IFR.4. Weather Maps/Charts.5. Weather Forecast Technology, Weather Radar.• Importance of Weight and balance – Flight Performance.• Careers in aviation industry.
1:25 – 1:55	Tour aircraft and other artefacts, rivet display, and plane coverings to small group (30 minutes). <ul style="list-style-type: none">• Explain British Commonwealth Air Training Program.• Tour planes: Nieuport XI, Tiger Moth, Chipmunk, Cornell, Harvard, Tracker, DC 3, T33, Cessna Skymaster.• Rivet display and plane coverings.• Artefacts: engines, instruments.
2:00 – 2:30	Flight simulator small group (30 minutes).
2:35	Depart.

Science Ten Learning Indicators and Outcomes

SCI10-C11: b, f, i

SCI10-FM1: c, e, f

SCI10-FM4: d, e, g



THEORY OF FLIGHT
Grade Ten Curriculum - Workshop Module
FULL DAY Tour - (9:30am to 2:30pm)

SCHEDULE: (Grade 10)

(Maximum 45 Students - Five groups of nine)

9:00 Arrive

9:05 – 9:15 Introduction and House Keeping topics, break up into groups (10 minutes).

9:20 – 10:10 Career Investigation Development of motion - related technologies (50 minutes).

- Direct Careers and Indirect Careers from Aviation Industry, education qualification, different branches of science (see attached).
- Motion Technologies: Sextant, Automatic Directional Finder (radio), radar, Squawk code, laser, GPS.
- Instrumentation: altimeter, GPS, Inertia Reference System
- Canadian Contributions to science and technology like transportation and space science.
- Pilot Training.

10:15 – 11:05 Tour aircraft and other artifacts, to small group (50 minutes).

- Explain British Commonwealth Air Training Program.
- Tour planes: Nieuport XI, Tiger Moth, Chipmunk, Cornell, Harvard, Tracker, DC 3, T33, Cessna Skymaster.

11:10 – 12:00 Relationship between Force and Motion (50 minutes).

- Review four forces: Thrust, Drag, Lift, and Gravity.
- Aerodynamics in Planes: wing design creating high and low pressure, Bernoulli's Principle.
- Air pressure / altitude in relationship to force and motion.
- Aviation Weather:
 1. Cold Front/ Warm Front.
 2. High Pressure vs Low Pressure.
 3. What is bad weather for flying? VFR vs IFR.
 4. Weather Maps/Charts.
 5. Weather Forecast Technology, Weather Radar.
- Importance of Weight and balance – Flight Performance.

12:00 – 12:45 **LUNCH** (Optional Scavenger Hunt Activity, visit Simulator).

12:45 Rejoin break-out groups and move to your next activity.

12:50 - 1:40 Flight simulator small group (50 minutes).

1:45 – 2:30 Assemble wooden model plane and rivet demonstration (50 minutes)

Or

Construction of paper airplane (50 minutes).



- Require Teacher Input and pre-teaching if doing paper airplane.
- Require Teacher to supply building materials: paper, tape, and data collecting sheets for paper airplane.
- Teacher is group leader with paper airplane construction.

2:30 Depart.

Science Ten Learning Indicators and Outcomes

SCI10-CI1: b, f, i

SCI10-FM1: c, e, f

SCI10-FM4: d, e, g