

RCACS 172 Ground School Objectives

Main Objective

The Main goal of this training is to ensure the student has a detailed understanding of Aircrafts, Aircraft operations and the rules associated with them, so the craft can be safely operated under all conditions encountered. The depth of understanding will be evaluated through weekly and final tests to the standards outlined in the reference material.

Enabling Objectives

The Following list describe the areas of focus for each of the modules covered in the class.

MODULE 1.1: The Airplane (Book: 1.1, 1.2, 1.3)

1. Be able to label the main **parts of an Airplane** on a given diagram
2. Describe the structure, components and characteristics of the **Tail Section**
3. Describe the structure, components and characteristics of the **Landing Gear**
4. Describe the different types of **Fuselages**
5. List the types and properties of **Construction Material**
6. Name and describe the different types of **Stresses** involved with aircraft
7. List the causes and forms of **Corrosion**
8. Describe the structure, components and characteristics of a **Wing**
9. Describe the main **Control Surfaces** of an aircraft
10. Describe **Loads** and Load factors
11. List the types of **Logs** associated with flying

MODULE 2.1: Theory of Flight – The Four Forces (Book:2.1.1)

1. Describe the **four forces** of flight: Lift, Weight, Thrust and Drag
2. Describe the components and characteristic of an **Airfoil**
3. Describe the **Center of Pressure**
4. Describe the different forms of **Drag**
5. Compare **Drag vs. Thrust**
6. Describe **Equilibrium and Couples**

MODULE 2.2: there is no material for this module

MODULE 2.3: Theory of Flight – Airplane Axis's (Book: 2.1.3)

1. Describe the **three Axis's** of the aircraft
2. **Define** the different types of **Stability**

MODULE 2.4: Theory of Flight – Flight Performance (Book: 2.1.5)

1. Describe the **Forces acting on** the aircraft
2. Discuss the aspects of **climbing and gliding**
3. Define forces and terms associated with **Turns**
4. Define **Stalls** and factors affecting stalls
5. Define **Spins**
6. Define **Spirals**
7. Discuss **Load Factor** on an aircraft
8. Discuss **Airspeeds** and The **limits** there of

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MODULE 2.5 Theory of Flight – Flight Instruments (Book: 2.2)

Describe the following aircraft design features and Instruments

1. Pitot-Static System
2. Airspeed Indicator
3. Altimeter
4. Vertical Speed Indicator
5. Magnetic Compass
6. Gyroscopes
7. Heading Indicator
8. Attitude Indicator
9. Turn and Slip Indicator

MODULE 3.1 Air Law - Aerodromes (Book: 4.1)

1. Differentiate between an **Aerodrome and an Airport**
2. Define **movements on the ground**
3. Identify the **Markings on the ground**
4. Describe **wind indicators**
5. Describe **Aerodrome lighting**
6. Describe **the circuit**
7. Describe **NORDO and ROLNLY** radio terms
8. Identify **ground and air light signals**

MODULE 3.2 Air Law – Airspace (Book: 4.2)

1. Define **domestic airspace**
2. Identify **altimeter regions**
3. Describe the **classes of airspace**

MODULE 3.3 Air Law – Rules of the Air (Book: 5.1)

1. Define aircraft **air worthiness**
2. List the required **documents for flight**
3. Discuss what it means to be **Pilot in command**
4. Discuss **rights of Way**

MODULE 3.4 Air Law - Visual Flight Rules (Book: 5.2.4)

1. Describe the different **flight rules**
2. List **VFR requirements and Weather limits and Special limits**
3. Define **Day and Night**
4. List **Night VFR** requirements
5. Discuss **Aircraft Lighting**
6. Describe **ATC Clearance and Instruction**
7. Discuss **Flight Plans**
8. Discuss **Cruising Altitudes**
9. Identify the requirements for **Oxygen**
10. Define **wake Turbulence**

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MODULE 4.1 Meteorology - The Atmosphere (Book: 6.1)

1. Describe the composition and Properties of the **Atmosphere**
2. Describe the various **layers of the Atmosphere**
3. Define ICAO **Standard Atmosphere**

MODULE 4.2 Meteorology - Clouds (Book: 6.2)

1. **Classify Clouds** by Height, and by Formation
2. Discuss the terms of **Sky Condition**
3. List the various **lifting Processes due to Cloud Conditions**

MODULE 4.3 Meteorology - Pressure (Book: 6.3)

1. Discuss **atmospheric pressure**
2. Describe **Altimeter Pressure Error**
3. Identify **Pressure Systems**
4. Discuss the **Coriolis Force**

MODULE 4.4 Meteorology - Wind (Book: 6.4)

1. Define **Wind**
2. List **Wind effects**
3. Describe aspects of **wind speed and direction**
4. List the types of **turbulence**

MODULE 4.5 Meteorology - Humidity, Temperature and Stability (Book: 6.5)

1. Define:
 - a. Humidity
 - b. Condensation
 - c. Sublimation
 - d. Evaporation
 - e. Relative Humidity
2. Discuss **Temperature**
3. Discuss **Atmospheric Heating** and **heat distribution aloft**
4. Discuss **Atmospheric Cooling**
5. Define **Lapse Rate**
6. Discuss **Stable and Unstable air**

MODULE 4.6 Meteorology - Air masses and fronts (Book: 6.7, 6.7)

1. Define a **Air mass**
2. **Classify Air masses**
3. Describe a **Weather Front**

MODULE 4.7 Meteorology - Precipitation (Book: 6.8,6.9)

1. Define the various forms of **precipitation**
2. List the different forms of **Fog**
3. Discuss the **properties and types and stages of Thunderstorms**
4. Describe **Icing and protections from icing**

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MODULE 4.8 Meteorology - Metars and Tafs (Book: 6.13, 6.14)

1. Define **METARS and TAFS**
2. Decode METARS and TAFS

MODULE 5.1 Navigation - Latitude and Longitude (Book: 7.1)

1. List the **Navigation Types**
2. Define **Latitude, Longitude and Geographical Co-ordinates**
3. Discuss **Time and Longitude**
4. Identify the **Great Circle and Rhumb Line**
5. Define **Headings and Bearings**
6. Discuss the concept of **Track**

MODULE 5.2 Navigation - Earths Magnetism (Book: 7.2)

1. Differentiate between **Magnetic and True North**
2. Describe **Headings**
3. Define **Variation and Deviation**
4. Describe **Heading/Track Conversions**
5. Define **Isogonic Lines**
6. Describe **Compass Errors**

MODULE 5.3 Navigation - Aeronautical Charts (Book: 7.4)

1. Describe various Units of **Distance and speed**
2. Describe Various aspects of **Scale** as it relates to Aeronautical Charts
3. Describe **relief on a map**
4. List various **VFR Charts** available

MODULE 5.4 Navigation – Track (Book: 7.4.6)

MODULE 6.1 Radio (Book: 8.1)

1. Define:
 - a. **Wavelength**
 - b. **Cycle**
 - c. **Frequency**
2. Describe various **Signal Characteristics**
3. Use the **Phonetic Alphabet**
4. Describe **Time and Money Terms** WRT to Radio Communications
5. Discuss Standard **radio Phrases**
6. Describe Standard **Radio Procedures**
7. List The **Priority Calls**
8. Discuss good **Radio Technique**
9. Describe **Emergency Radio Procedures**
10. List the common **Communication Check Symbols**

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MODULE 8.1 Piston Engines (Book: Various)

With respect to Piston Aircraft engines, be prepared to discuss:

1. Construction
2. Types
3. Lubrication
4. Ignition Systems
5. Fuels, Induction Systems
6. Carburetion/Mixture
7. Fuel Injection
8. Turbo-charging/Super-charging
9. Constant Speed Propeller Systems
10. Combustion Problems
11. Electrical System