

SAULT COLLEGE
of Applied Arts and Technology
Sault Ste. Marie

COURSE OUTLINE

AIRFRAME AND ENGINES
AVT 100-6

revised June, 1981

AIRFRAME AND ENGINES

AVT 100-7

TEXT:

From The Ground Up - A.F. MacDonald

STUDY AND REFERENCE GUIDE:

Sault College Curriculum Directives

Ministry of Transport Study and Reference Guide for Private Pilots

Ministry of Transport Sample Examination for Private Pilots Licence

Ministry of Transport Study Guide for Private Pilots

AIRFRAMES AND ENGINES

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GENERAL OBJECTIVE:

To teach in theory and in practice Aviation Technology, with emphasis on study toward the Private Pilot Licence Standard, as required by the Ministry of Transport.

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Topic No.	Periods	Topic Description	Reference
1,2	1	Airframe Design Airframe Construction	FGU - Airframe FGU - Airframe
3,4	1	Aero Engine Introduction and Principles Aero Engine Carburation	FGU - Aero Engines
5,6	1	Airframe Electrical System Aero Engines Electrical System	FGU - Aero Engines FGU - Aero Engines
7,8	1	The Aero Engine Propeller Aero Engine Operation Question Sheet	FGU - Aero Engines FGU - Aero Engines
Test	1	MID TERM EXAM	
9	1	Airframes and Engines	Study Guide for Private Pilots - MOT
Test	1	FINAL AIRFRAMES AND ENGINES EXAM	
Test	1	MOT PRIVATE PILOTS WRITTEN EXAMINATION	

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SPECIFIC OBJECTIVES:

1. Airframe design:

The student is required to know:

- a) airframe nomenclature
- b) design factors relating to streamlining and speed
- c) the relation of lift/drag to streamlining
- d) methods of reducing drag by the use of curved surfaces, spats, fairings, etc.
- e) airframe design to withstand loads and stresses
- f) the types of stresses
- g) the types of corrosion
- h) the types of fuselage construction

2. Airframe construction:

The student is required to know:

- a) the type of airframe construction used in modern airplanes
- b) airframe construction nomenclature
- c) the position of aircraft control - their location and method of movement
- d) the function of the landing gear and types - fixed and retractable
- e) the purpose of shock struts and types

NOTE: A viewgraph discussion on the various parts of a Cessna 150 is to take place during this period.

3. Aeroengine introduction and principles:

The student is required to know:

- a) the principle operation and care of the internal combustion engine
- b) the four stroke principle of the internal combustion engine
- c) the types of piston engines advantages and disadvantages
- d) construction detail of the internal combustion engine

- e) the methods of cooling
- f) the methods and functions of lubrication
- g) oil requirements
- h) lubrication methods wet and dry sump

4. Aeroengine carburation:

The student is required to know:

- a) the purpose of carburation
- b) the theory and operation of the basic carburator
- c) the reasons for carburator icing and how carburator ice is recognized
- d) the method of preventing carburator icing
- e) the theory and purpose of turbo-chargers and super-chargers

5. Airframe electrical systems:

The student is required to know:

- a) the following parts of an aircraft electrical system:

- i) battery
- ii) generator
- iii) voltage regulator
- iv) bus bar
- v) circuit breaker
- vi) ammeter
- vii) voltmeter
- viii) generator warning lights
- ix) bonding

- b) by item, describe the function and reason of each part mentioned in "a"

6. Aeroengine electrical system:

The student is required to know:

- a) the difference between the airframe and aeroengine electrical system
- b) the principles of the magneto as applicable to the aeroengine ignition system
- c) the parts of a magneto
- d) the purpose of dual ignition
- e) the requirement for shielding

7. The aeroengine propeller:

The student is required to know:

- a) purpose of the propeller
- b) the relation of the propeller to an airfoil and efficiency
- c) the definitions associated with pitch

NOTE: This is also covered in theory of flight and should be treated as a review under the heading of Airframes and Engines.

8. Aeroengine operation:

The student is required to know in theory:

- a) handling procedure
- b) starting procedures
- c) safety precautions
- d) taxiing procedures

NOTE: The practical aspect of this class will be covered by the Flight Instructor using the MOT "Flight Instructors Guide"