

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: AIRFRAMES AND ENGINES

Code No.: AVT 100-6

Program: AVIATION TECHNOLOGY

Semester: ONE

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APPROVED: R.P. Crozitto
Chairperson

Date

AIRFRAMES AND ENGINES

AVT 100-6

PHILOSOPHY/GOALS:

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

METHOD OF ASSESSMENT (GRADING METHOD):

<u>TOPIC NO.</u>	<u>PERIODS</u>	<u>TOPIC DESCRIPTION</u>	<u>REFERENCE</u>
1	1	Airframe Design	FGU - Airframe
2	1	Airframe Construction	FGU - Airframe
3	3	Aero Engine Introduction and Principles	FGU - Aero Engines
4	1	Aero Engine Carburation	
5	1	Airframe Electrical System	FGU - Aero Engines
6	1	Aero Engines Electrical System	FGU - Aero Engines
TEST	1	Mid - Term Exam	
7	2	The Aero Engine Propeller	FGU - Aero Engines
8	1	Aero Engine Operation Question Sheet	FGU - Aero Engines
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	

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 controls - 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".

TEXTBOOKS:

From the Ground Up - A. F. MacDonald

Study and Reference Guides:

Sault College Curriculum Directives

Transport Canada Study and Reference Guide for Private Pilots

Transport Canada Sample Examination for Private Pilots

Transport Canada Study Questions for Private Pilots