

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: ENGINES AND AIRFRAMES
Code No.: AVT 230-4
Program: AVIATION TECHNOLOGY (FLIGHT)
Semester: THREE
Date: AUGUST, 1985
Author: PAUL HOLDER

New: _____ Revision: X

APPROVED: *J.P. Crozitto*
Chairperson Date

ENGINES AND AIRFRAMES
Course Name

AVT 230-4
Course Number

PHILOSOPHY/GOALS:

1. To make the student aware of the purpose of the main elements of the aircraft, so they will be better able to assess the seriousness of damage or modification to the aircraft.
2. To emphasize the necessity for the designer to set flight restrictions, and the importance of flying within these restrictions.
3. To make the student more familiar with engineering terms, so they will be better able to communicate with maintenance personnel and report on the condition of the aircraft.
4. To make the student more alert to the structural condition of the aircraft, and its materials.

METHOD OF ASSESSMENT (GRADING METHOD):

Test grades will be averaged for the final mark. There will be a minimum of three tests during the semester.

TEXTBOOK(S):

Airframes and Powerplant Mechanics, Airframe Handbook:, AC65-15A

Superintendent of Documents,
U.S. Gov't Printing Office,
Washington DC 20402

TOPIC NUMBER

TOPIC DESCRIPTION

Airframe Structures and Materials

- | | |
|---|--|
| 1 | Nomenclature |
| 2 | Aircraft Materials
a) types, properties and specifications of non-ferrous, and non-metallic aircraft materials.
b) standard material thickness and shapes |
| 3 | Strength of Materials
- limit and ultimate load, stress, strain, elasticity, stress concentrations, beams, columns, margin of safety, creep, endurance limit, fatigue strength, eccentrically loaded fastener groups, repair schemes, pressure vessels. |
| 4 | Corrosion
a) electrolytic and oxidation types
b) resistance to corrosion by various A/C materials
c) corrosion resisting and high temperature alloys
d) paints and coatings. |
| 5 | Standard Parts |
| 6 | Testing
a) destructive
b) non-destructive |
| 7 | Landing gear shock absorbing methods |

Engines

- | | |
|---|--|
| 1 | Review of first year - 2 hours

Engine classification and construction
a) Piston Engines
- cylinder arrangement (advantages and disadvantages)
- function and construction of engine parts
b) Turboprop
- engine description
c) Turbojet
- engine description |
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N.B. The students are taught the PT6A-27 Turbo Prop engine. It is used in greater than 60% of all light Twin engine aircraft. The relationship between the engine and airframe engine controls is also taught. Materials used are from the DeHavilland Aircraft of Canada Twin Otter Pilot Training course and consist of T.O. cockpit layout, overhead transparencies, P & W PT6A-27 school notes and an audio visual presentation of T.O. engine start and shut-down.