

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ONTARIO**



Sault College

COURSE OUTLINE

COURSE TITLE: Airframes, engines and Maintenance Requirements

CODE NO. : AVT 3750 -4

SEMESTER: Seven

PROGRAM: Aviation Technology (Flight)

AUTHOR: Earl Turner

DATE: 02-Jan-7

PREVIOUS OUTLINE

new

DATED:

APPROVED:

DATE

DEAN

TOTAL CREDITS: 4

PREREQUISITE(S): AVT2450

HOUR/WEEK: 3

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School of School of Technology, Engineering and Technical Trades

I. COURSE DESCRIPTION:

A study of airframes and engines including the internal combustion engine and the basic gas turbine engine, fuels and fuel systems, lubrication and oil, ignition systems, engine instruments, propellers, airframes. Also a study of aircraft maintenance requirements to the level required of a Person Responsible for Maintenance (PRM) for an Air Operator.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Describe the layout and operation of typical aviation powerplants and their systems.

Potential Elements of the Performance:

- Knowledge of piston engine layout, operational cycles etc.
- Knowledge of turbine theory, layout, gas flow etc.
- Knowledge of propeller terminology, types, control systems, operation etc.
- Knowledge of fuel, lubrication, induction, exhaust, ignition, starting, fire, monitoring and control systems.
- Ability to properly operate engines efficiently while optimizing their reliability and longevity.
- Ability to detect and troubleshoot common engine problems.
- Rationalization of the checklists and procedures associated with aircraft engines.

2. Describe the various types and styles of airframe construction, the properties of the materials used and the systems associated with aircraft such as electrical, pneumatic, vacuum, hydraulic, anti/de-ice, heating/ventilating/cooling and pressurization.

Potential Elements of the Performance:

- Knowledge of various construction materials and their properties.
- Knowledge of the various airframe styles and types of construction
- Understanding of stress and strain and the limitations imposed on airframes.
- Understanding of corrosion concerns
- Knowledge of the various systems.
- Ability to operate the systems.
- Ability to detect faults and common airframe defects and to troubleshoot the systems.
- Ability to properly operate airframes efficiently while optimizing their reliability and longevity.
- Rationalization of the checklists and procedures associated

with aircraft systems.

3. Perform the duties of a Person Responsible for Maintenance of an air operator or flight training unit.

Potential Elements of the Performance:

- Knowledge of general maintenance requirements prescribed by CARs.
- Knowledge of the additional requirements for an air operator or FTU.
- Knowledge of a typical Maintenance Control Manual and its related sub manuals (Sault College MPCM)
- Familiarity with the format of typical maintenance publications such as Airworthiness Directives, Type Certificates, Manufacturer's Service Bulletins etc.

III. TOPICS:

1. Piston Engines and systems
2. Turbine Engines, and systems
3. Propellers and propeller systems
4. Airframes, materials, corrosion, stress and strain.
5. General maintenance requirements.
6. Maintenance requirements for the commercial operator.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. From the Ground Up
2. Flight Training Manual.
3. Sault College Ground School Manual – Zlin Z-242-L
4. Piper PA44 Seminole Information Manual
5. CARs (internet)
6. Sault College Maintenance Policy and Control Manual
7. Sault College Maintenance Schedules – Zlin Z-242-L and Piper PA44

V. EVALUATION PROCESS/GRADING SYSTEM:

Enter description of how they will be graded

The student will be assessed by a combination of attendance and deportment, quizzes, tests and a final exam. Weighting of each will be as follows: 10% for attendance and deportment, 10% for quizzes, 40 % for all tests prior to the final exam and 40% for the final exam. A minimum mark of 70% is required to pass the course. Re-writes are not permitted except in accordance with section VI of this outline.

- When attendance is taken, the attendance mark will be awarded as follows: unexcused absences will result in 2% deduction, arriving for class late will result in a 1% deduction, and violations of the dress code will result in a 1% deduction up to a maximum of the attendance grade. In the event of illness, a telephone call must be made prior to the beginning of the class (a voice mail message is acceptable).

Examples of dress code violations will include, but not limited to, not shaving, not wearing a tie, etc.

- Quizzes may be given without prior notice.
- If it is necessary to re-write the final exam in order to pass the course, the highest grade achievable will be a "C". (See re-write policy in section VI)
- Students may request a deferment of a test for compassionate reasons. Compassionate Grounds for deferment will include but not be limited to death of an immediate family member, personal illness, or recent diagnosis of a serious illness of a family member. **Rewrites will not be permitted after the fact for compassionate reasons.**
- **"R" grades in any subject at the end of a semester will result in termination from the Aviation program. Re-writes in aviation subjects are not permitted except as provided in the re-write policy below.**
- Attendance is mandatory for all Aviation classes unless approval is granted in advance. In the case of illness, a phone call, voice mail or e-mail message is expected.
- If a student expects to be late or will be delayed for any reason, every attempt should be made to contact the professor, or leave a message on voice mail or e-mail.
- Although attitude, co-operation, etc., are not graded, students may be terminated based on their performance in this area (see section VI). These attributes are also considered in the selection of the Air Canada Award and other scholarships.
- Dates of tests will be announced at least 1 week in advance.

The following semester grades will be assigned to students in postsecondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	93 - 100%	4.00
A	87 - 92%	3.75
B	80 - 86%	3.00
C	70 - 79%	2.00
R (Repeat)	70% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see <i>Policies & Procedures Manual – Deferred Grades and Make-up</i>).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.	

VI. SPECIAL NOTES:

Attitude and Conduct

Attitude plays an important role in your ability to exercise good judgement. Although attitude is not being graded, it affects your ability to learn as well as your safety as a student and future as a professional pilot. Students who display a strong tendency towards any of the five hazardous attitudes pose a grave risk to themselves and others. For this reason these students will be counseled and will be put on a behavioural contract. If counseling is ineffective, then the student will be withdrawn from the program.

The five hazardous attitudes are identified as Anti-authority, Impulsivity, Invulnerability, Machismo, and Resignation. These hazardous attitudes are described in “Human Factors for Aviation – Basic Handbook” on pages 151 and 152.

Re-Write Policy

- No re-writes on tests occurring prior to final exams.
- No re-writes on any Transport Canada exam.
- If the final grade achieved for this course is less than 70%, a second final exam may be written at the discretion of the professor for this course. The second exam will be averaged with the first exam to determine the resulting exam mark, and the final grade will be then calculated.
- In the event that a second final exam is required, the highest achievable overall grade for this course will be a C

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.