

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 375 -4	SEMESTER:	Seven
PROGRAM:	Aviation Technology (Flight)		
AUTHOR:	Earl Turner		
DATE:	2004-May-12	PREVIOUS OUTLINE DATED:	2002-Jan-7
APPROVED:	_____		

TOTAL CREDITS: 4

PREREQUISITE(S): AVT245

HOUR/WEEK: 3

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For additional information, please contact Colin, Kirkwood, Dean
School of Technology, Skilled Trades, Natural Resources & Business

Extension 2688

I. COURSE DESCRIPTION:

A study of aircraft maintenance requirements to the level required of a Person Responsible for Maintenance (PRM) for an Air Operator. Also 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.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. 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.

2. 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.

3. 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.

III. TOPICS:

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

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

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

V. EVALUATION PROCESS/GRADING SYSTEM:

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: 30% for quizzes, 30% 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. Make-up tests are not permitted except in accordance with section VI of this outline.

- Unexcused absences will result in 2% deduction of the final mark for each occurrence, arriving for class late will result in a 1% deduction of the final mark for each occurrence, and violations of the dress code will result in a 1% deduction of the final mark for each occurrence. Refer to the SOP GEN 1.3 for dress code policies and SOP GEN 1.6.7 for policy regarding absence from classes
- Quizzes will be given without prior notice.
- If it is necessary to write a second final exam in order to pass the course, the highest grade achievable will be a "C". (See make-up 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. **Make-ups will not be permitted after the fact for compassionate reasons.**
- **"F" grades in any subject at the end of a semester will result in termination from the Aviation program.**
- 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.
- A classroom code of conduct can be found in the SOP General section, and will be adhered to.

The following semester grades will be assigned to students in this course:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 -100%	4.00
A	80 - 89%	3.00
B	70 - 79%	2.00
C	assigned if a make-up exam was required to complete the course	0.00
F (Fail)	below 70%	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

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, students exhibiting one or several hazardous attitudes will be counselled and if necessary, will be put on a behavioural contract. If this is ineffective in modifying unacceptable behaviour, 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.

Make-up Policy

- No make-ups on tests occurring prior to final exams.
- No make-ups on quizzes.
- Make-up exams will only be done under a learning contract.
- 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 then be calculated.
- In the event that a second final exam is required, the highest achievable overall grade for this course will be a C
- Any student that requires 100% or greater on a make-up exam to pass the course will not be allowed to write a make-up exam.

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 professor and/or the Special Needs office. Visit Room E1101 or call Extension 493 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.