

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 **SEMESTER:** Seven
PROGRAM: Aviation Technology (Flight)
AUTHOR: Earl Turner
DATE: July 4, 2016 **PREVIOUS OUTLINE DATED:** June 11, 2015

APPROVED:

Greg Mapp
Chair *July 11th 2016*
DATE

TOTAL CREDITS: 4
PREREQUISITE(S): AVT245, AFT 250
HOUR/WEEK: 3

Copyright ©2016 The Sault College of Applied Arts & Technology
Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.
For additional information, please contact Greg Mapp, Chair, Aviation Technology (Flight)
Aviation (Flight) Technology Program
(705) 759-2554, Ext. 2865
greg.mapp@saultcollege.ca

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 (i.e. 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 (LMS)
3. Sault College Maintenance Schedules – Zlin Z-242-L and Piper PA44 (LMS)
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 department, quizzes, tests and a final exam. Weighting of each will be as follows: 20% for quizzes, 30% for all tests prior to the final exam and 50% for the final exam. A minimum mark of 70% (B) is required to pass the course.

- 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.
- 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.**

- A classroom code of conduct can be found in the SOP General section, and will be adhered to.
- 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.
- If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	
A	80 – 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

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.

Attendance:

Attendance is mandatory in this course. Please read the bullet on "Unexcused Absences" under **Section V: EVALUATION PROCESS/GRADING SYSTEM**

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.



COURSE OUTLINE ADDENDUM

1. Course Outline Amendments:
The faculty member reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.
2. 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.
3. Prior Learning Assessment:
Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Key Dates Calendar for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio. Student Services, located in E1101, can provide information regarding the Prior Learning Assessment and Recognition policy or it can be viewed on the student portal.

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

4. Student Portal:
The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.
5. Communication:
The College considers **Desire2Learn (D2L)** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of this Learning Management System (LMS) communication tool.

6. Accessibility Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with the Accessibility Services office. Visit Room E1101, call Ext. 2703 or email studentsupport@saultcollege.ca so that support services can be arranged for you.

7. Audio and Video Recording Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. Students with disabilities who require audio or visual recording devices in the classroom as an accommodation will receive approval from their counsellor once the Audio and Video Recording Devices in the Classroom Policy has been reviewed by the student. Recorded classroom instruction will be used only for individual academic use and will not be used for any other purpose. Recordings may only be used for individual study of materials presented during class and may not be published or distributed. Intentional misuse of audio and video recordings or intentional misrepresentation when requesting the use of a device for recording shall constitute a violation of this policy and laws protecting intellectual property.

8. Academic Dishonesty:

Students should refer to the definition of "academic dishonesty" in the *Student Code of Conduct*. Students who engage in academic dishonesty will be issued a sanction under the Student Code of Conduct which could lead to and include expulsion from the course/program. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, students must use a documentation format for referencing source material.

9. Tuition Default:

Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of November (fall semester courses), first week of March (winter semester courses) or first week of June (summer semester courses) will be removed from placement and clinical activities due to liability issues. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.