SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	Airframes, Engines and Maintenance Requirements		
CODE NO. :	AVT 375	**SEMESTER:**	Seven
PROGRAM:	Aviation Technology (Flight)		
AUTHOR:	Earl Turner		
DATE:	June 7, 2013	**PREVIOUS OUTLINE DATED:**	Jan. 10, 2013

APPROVED:

AVIATION OPERATIONS MANAGER **DATE** June 24 2013

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

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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 deportment, 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.

The following semester grades will be assigned to students:

Grade	**Definition**	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
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.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.

NOTE: In accordance with the Sault College Student Code of Conduct Article 2, Section 22, all students are requested to turn OFF their cellular phones (Including Blackberry and iPhone devices) prior to class commencing. Failure to do so may result in the student being dismissed from the lesson. Texting, e-mailing and social networking are all distractions that are not commensurate with the learning of new material or participation in class discussions. Exceptions may be granted with the professor's consent.