SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	Engine, Airframes and Instruments 2		
CODE NO. :	AVF245-1	**SEMESTER:**	Four
PROGRAM:	Aviation Technology (Flight)		
AUTHOR:	Earl Turner		
DATE:	Aug. 23, 2010	**PREVIOUS OUTLINE DATED:**	May 13, 2009
APPROVED:	"B.Punch"		
	CHAIR		**DATE**
TOTAL CREDITS:	1		
PREREQUISITE(S):	AVT115, AFT120		
HOURS/WEEK:	1		

I. COURSE DESCRIPTION:

A study of engines and airframes including the internal combustion engine and the basic gas turbine engine, fuels and fuel systems, lubrication and oil, ignition systems, engine instruments, propellers, airframes, and electrical systems at the Commercial Pilot Level.

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 the various types of aircraft engines 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, operation etc.
   - Knowledge of fuel, lubrication, induction, exhaust and ignition 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 and materials.
   Potential Elements of the Performance:
   - Knowledge of various construction material 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.
   - Ability to properly operate airframes efficiently while optimizing their reliability and longevity.
   - Ability to detect common airframe defects.
3. Describe aircraft systems such as electrical, pneumatic, vacuum, hydraulic, heating/ventilating etc.
   Potential Elements of the Performance:
   - Knowledge of the various systems.

- Ability to operate the systems.
- Ability to detect faults and troubleshoot the systems.
- Rationalization of the checklists and procedures associated with aircraft systems.

III. TOPICS:

1. Piston Engines.
2. Systems Associated with Piston Engines.
3. Propellers.
4. Turbine Engines.
5. Airframes.
6. Electrical Systems.
7. Other Systems.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. From the Ground Up
2. Flight Training Manual
3. Sault College Ground School Manual – Zlin Z-242 L

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% 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.**
- 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	assigned if a make-up exam was required to complete the course	2.00
F (Fail)	69% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
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 counseled and if necessary, will be put on a behavioral contract. If this is ineffective in modifying unacceptable behavior, 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.

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 plan.
- If the overall mark 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 this will be used to determine the final overall mark.
- In the event that a make-up 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.

VII. COURSE OUTLINE ADDENDUM:

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