

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

**COURSE TITLE:** Flight Theory and Operations  
**CODE NO. :** AVF117 **SEMESTER:**  
**PROGRAM:** Aviation Technology (Flight)  
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WebCT/LMS  
**DATE:** 09, 01, 12 **PREVIOUS OUTLINE DATED:** 09, 01, 11  
**APPROVED:**  

	<u>Steven Hause</u>	<u>2012 05 12</u>
	CHAIR	DATE

  
**TOTAL CREDITS:** 2  
**PREREQUISITE(S):** N/A  
**HOURS/WEEK:** 2

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*For additional information, please contact Steve Hause, Chair*  
*Aviation Flight*  
*(705) 759-2554, Ext. 2794*

**I. COURSE DESCRIPTION:**

An introductory course in aircraft performance. The course introduces the student to basic aerodynamic principles and their underlying theories and how theory translates into practical applications with the use of performance charts for estimating cruise, range, endurance, take off and landing performance. Other performance areas include power and thrust, load and stress analysis, design characteristics of various airplane categories and the need to design economically efficient air transportation.

The course also introduces cockpit instrumentation and the need to understand and interpret airplane performance during normal and abnormal maneuvers and an appreciation of the operating limitations of traditional instrumentation.

Basic physiological and psychological factors are introduced to create an awareness of the false interpretation of aircraft performance due to health issues and life style practices that affect our sensory perceptions and our responsiveness to changing conditions that might compromise safety.

Other areas of concern include the need for safe practices surrounding the *Clean Aircraft Concept* and surface contamination covered in Transport Canada's document TP10643E, a review of *Aircraft Critical Surface Contamination Training For Aircrew and Groundcrew*. This material merges airplane performance with relevant air law covered in the CARs (Canadian Air Regulations) concerning the problems of safe procedures for the recognition of ground icing and the delegation of responsibility for inspections and reporting of an aircraft's condition to the Pilot In Command.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1. Appreciate that one element of safe flying is an understanding of aircraft performance under varying conditions.
2. Always reference a manufacturer's documentation for specific information in all phases of flight due to varying conditions.
3. Appreciate the limitations of flight instruments in providing precise information and the need to make corrections and allowances.

4. Understand that different aircraft designs require some variation in piloting techniques and there is a need to stay current if one chooses to fly different designs.
- 4 Understand the performance of aircraft in normal and unusual attitudes and how they can be interpreted through the cockpit instrumentation.
- 5 Appreciate the need to stay current with the Canadian Air Regulations with regard to regular inspections of aircraft systems with regard to both VFR and IFR procedures and aircraft surface decontamination procedures
- 6 Understand all the human factors associated with aviation related physiological conditions, their consequences for the safe piloting of aircraft, and Transport Canada's own aeromedical recommendations for pilots in regard to avoiding and dealing with these critical physiological conditions.

### **III. TOPICS:**

1. Mechanical operation of pitot static instruments and systems.
2. Mechanical operation of gyroscopic instruments and systems
3. Errors due to the operation of the instruments and the need to correct the errors for safety considerations
4. Cover typical light aircraft flight performance charts and their application to all performance operations with emphasis on safety and proper airmanship skills
- 5 Various theories of lift.
- 6 Lift, drag and power curve relationships.
- 7 Stability.
- 8 Sub-sonic, transonic and supersonic flight airflow theory.
- 9 Review of TP10643E Aircraft Critical Surface Contamination Training.
- 10 Performance Charts

### **IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- From The Ground Up
- Professor Handouts
- Power Point through WebCT/LMS
- Various Transport Canada Documents located on the LMS

**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:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
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	

F (Fail)	below 70%	0.00
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.	

## VI. SPECIAL NOTES:

### 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 2703 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.

### Communication:

The College considers **WebCT/LMS** 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 the **Learning Management System** communication tool.

### Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. 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.

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 will be removed from placement and clinical activities. 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.

**VII. 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.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.