

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: Advanced Aerodynamics

CODE NO. :

AVT364

SEMESTER: 6

PROGRAM:

Aviation Technology (Flight)

AUTHOR:

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WebCT/LMS

DATE:

09, 01, 12

PREVIOUS OUTLINE DATED:

09,01,11

APPROVED:

Steven Haue

2012 05 15

CHAIR

DATE

TOTAL CREDITS:

1

PREREQUISITE(S):

N/A

HOURS/WEEK:

3

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*For additional information, please contact Steve Hause, Chair
School of Natural Environment/ Outdoor Studies & Technology Programs
(705) 759-2554, Ext. 2794*

I. COURSE DESCRIPTION:**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1. Fundamental Physical Quantities of a Flowing Gas
2. The Source of All Aerodynamic Forces
3. Equation of State for a Perfect Gas
4. Continuity, Incompressible Flow, Compressible Flow and Momentum Equation
5. Airflow characteristics of the boundary layer of air over airfoils
6. Design of aircraft and the need to use coefficients in calculations
7. Problems of transonic airflow and the design of supersonic aircraft
8. Dynamics of Stability and Control
9. Problems of hypersonic flight and the use of basic trajectory calculations
10. Mechanics of Propulsion
11. Design of Hypersonic Vehicles

III. TOPICS:

1. Basic gas laws
2. The Standard Atmosphere
3. Basic Thermodynamics
4. Airfoils, Wings, and Other Aerodynamic Shapes
5. Elements of Airplane Performance
6. Principles of Stability and Control
7. Supersonic flight
8. Fundamentals of rockets and orbital mechanics

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Aerodynamics For Naval Aviators
- Handouts
- Power Point through WebCT/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:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	3.00
C	60 - 69%	2.00

D	50 – 59%	1.00
F (Fail)	49% 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:

Attendance:

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.