

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Advanced Aerodynamics

CODE NO. : AVT364

SEMESTER:

PROGRAM: Aviation Technology (Flight)

AUTHOR: John Portas M.B.A., M.P.A.
Extension 2518 Room B1230
Microsoft Outlook - john.portas@saultcollege.ca
WebCT/LMS

DATE: 09, 01, 08 **PREVIOUS OUTLINE DATED:** New

APPROVED: "Brian Punch"

		CHAIR	DATE
TOTAL CREDITS:	1		
PREREQUISITE(S):	N/A		
HOURS/WEEK:	1		

Copyright ©2008 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 Brian Punch, Chair
School of The Natural Environment, Technology & Skilled Trades
(705) 759-2554, Ext. 2681

I. COURSE DESCRIPTION:

The course covers a wide range of topics including subsonic, transonic, supersonic, hypersonic and orbital flight with the aim of giving the student some historical appreciation of the great amount of scientific and engineering investigation and discovery that has been made to advance flight to its current stage of development and the effort needed to push it further.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

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. Fundamental Physical Quantities of a Flowing Gas
2. The Standard Atmosphere
3. Advanced Aerodynamics
4. Airfoils, Wings, and Other Aerodynamic Shapes
5. Elements of Airplane Performance
6. Principles of Stability and Control

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%	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.

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

<include any other special notes appropriate to your course>

<include the following paragraph if there is a placement or clinical component to this course. You may wish to consult with your chair.>

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 *<choose November, March, or June>* 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.