

**SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE MARIE, ON**



**COURSE OUTLINE**

**Course Title: MECHANICS OF FLIGHT**

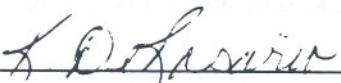
**Code No.: ASR102                      Semester: 1**


**Program: AIRCRAFT STRUCTURAL REPAIR**

**Author: STEVE LACHOWSKY**

**Date: JUNE 1998              Previous Outline Date: FALL 93**

**Approved:**

  
**Dean**

  
**Date**

**Total Credits: 3**

**Prerequisite(s):**

**Length of Course: 3 HR./WK.**

**Total Credit Hours: 51**

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For additional information, please contact Kitty DeRosario, Dean, School of Trades  
& Technology, (705) 759-2554, Ext. 642.



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 COURSE NAME

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 COURSE NUMBER

**I. COURSE DESCRIPTION:**

This course deals with the various forces acting on an aircraft in flight. Presentations deal with airfoil design, flight control systems, aircraft axis and various terms associated with aircraft controllability and stability. Various aircraft control systems will be researched by the students.

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

(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

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

- 1) Discuss and understand how an aircraft maintains flight, forces acting on A/C during flight. Various terms such as wing condition, center of pressure, angle of attack and aircraft stability and maneuverability.

Potential Elements of the Performance:

- describe how an aircraft produces lift using Bernoulli's Principle.
- identify the four forces acting on an aircraft during flight
- discuss terms such as relative wind, airfoil, wing camber, wing chord, center of pressure and angle of attack
- describe the three axis of an aircraft and the terminology associated with the aircraft movements about the three axis
- discuss aircraft stability and the various factors associated and affecting stability
- describe lateral, longitudinal and vertical stability
- describe profile and induced drag as they affect aircraft flight

- 2) Research and discuss various aircraft control systems as presented by both instructor and students groups. Rebalancing techniques of control surfaces will be presented.

Potential Elements of the Performance:

- identify primary and secondary control systems of an aircraft and how they operate
- describe various systems and the components found in the system
- discuss components found in elevator, rudder, and aileron systems in DeHaviland Turbo Beaver aircraft
- discuss secondary systems such as trim tab systems found in DeHaviland Turbo Beaver

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COURSE NAME

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## **II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE (Continued)**

Potential Elements of the Performance Continued.....

- discuss personal assignment in front of class pertaining to their system as assigned by the instructor
- discuss the purpose of spoilers, slats, slots and stall strips associated with wing components
- describe the purpose of rebalancing aircraft components after repair using the “static” balancing method

## **III. TOPICS:**

- 1) Theory of Flight
- 2) Flight Control Systems

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

A/C 65-15A

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COURSE NAME

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COURSE NUMBER**V. EVALUATION PROCESS/GRADING SYSTEM**

Two Multiple Choice Tests - Each accounts for 50 Percent of the final grade.

Grading: A+ (94-100%)    B (78-85%)  
          A (86-93%)        C (70-77%)            R (Repeat)

**VI. SPECIAL NOTES:**

- Special Needs  
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 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 post-secondary institutions.
- Disclaimer for Meeting the Needs of the Learners
- Substitute Course Information is available at the Registrar's Office.
- COURSE NOTE: All assignments must be completed. Failure to complete assignments will automatically remove 10% of the final grade.

**VII. PRIOR LEARNING ASSESSMENT**

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following: