SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: MECHANICS OF FLIGHT

CODE NO: ASR102 SEMESTER: I

PROGRAM: AIRCRAFT STRUCTURAL REPAIR TECHNICIAN

AUTHOR: STEVE LACHOWSKY

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PREVIOUS OUTLINE DATED: FALL 1992

APPROVED: L P Chouinard 94-02-02
Dean, School of Engineering Tech. Date

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TOTAL CREDIT HOURS: 45 (3 credits)

PREREQUISITE(S):

I. PHILOSOPHY/GOALS:

This course deals with the various forces acting on an aircraft in flight. We deal with airfoil design, flight control systems, aircraft axis and various terms associated with aircraft controlability.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

Discuss how aircraft flight is produced. Describe how aircraft are affected in flight. Identify aircraft design and factors affected aircraft stability. Discus aircraft flight control systems.

III. TOPICS TO BE COVERED:

1. Theory of flight.
2. Flight control systems.

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LEARNING ACTIVITIES	REQUIRED RESOURCES
1.0 Theory of Flight	Textbook: AC-65-15A Pg. 39 to 44.
Upon successful completion of this unit the student will be able to:	
1.1 Describe how an aircraft produces lift using Bernoull's Principle.	
1.2 Identify the four forces acting on an aircraft during flight.	
1.3 Discuss terms such as Relative Wind, airfoil, wing camber, wing Cord, Centre of Pressure, and Angle of Attack.	
1.4 Describe the three axis of an aircraft and the terminology associated with the aircraft movements about the three axis.	
1.5 Discuss aircraft stability and the various factors associated and affecting stability.	
1.6 Describe lateral, longitudal and vertical stability.	
1.7 Describe profile and induce drag as they affect aircraft flight.	
2.0 Flight Control Systems	Textbook: AC 65-15A Chapter II, pg. 40 to 83.
Upon successful completion of this unit the student will be able to:	
2.1 Identify primary and secondary control systems of an aircraft and how they operate.	
2.2 Describe various systems and the components found in the system.	
2.3 Discuss components found in elevator, rudder and aileron systems in DeHaviland Turbo-Beaver aircraft.	DeHaviland Maintenance Manual Turbo Beaver

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LEARNING ACTIVITIES	RESOURCES REQUIRED
2.4 Discuss secondary systems such as trim tab and flap systems found in DeHaviland Turbo-Beaver Aircraft and Canadair CL215 aircraft.	Canadair Training Textbook for CL 215 Aircraft.
2.5 Identify which control system affects aircraft movement or pilot selection.	
2.6 Describe how to use structural repair and parts manuals for parts identification and removal for repair.	
2.7 Discuss personal assignment in front of class pertaining to their system as assigned by the instructor.	
2.8 Discuss the purpose of Spoilers, Slats, Slots, and Stall Strips associated with wing components.	Textbook AC 65-15A Chapter II, pg. 80 to 82.
2.9 Describe the purpose of rebalancing aircraft components after repair using the "static" balancing method.	

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V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

Written tests (2):

Theory of Flight - 50%
Flight Control Systems - 50%
Total of 100%.

Grading will be as follows:

A	90% - 100%
B	80% - 89%
C	70% - 79%
I	Incomplete

VI. REQUIRED STUDENT RESOURCES

A & P Airframe textbook - AC 65-15A

Aircraft Flight Control Systems (teacher handout) - Dehaviland Beaver Manual, Canadair Training Manual

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY:

Book Section (title, publisher, edition, date, library call number if applicable - see attached example)

Periodical Section (Magazines, Articles)

Canadian Aircraft Operator
Department of Transport Service Bulletins and Airworthy Directives

Audiovisual Section (Videotape, Filmstrips, Transparencies)

As per Chapter II found in AC 65-15A

VIII. SPECIAL NOTES

Students with special needs (eg. physical limitation, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of the students.