



COURSE OUTLINE

ASR102

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Prepared: Larry Canduro Approved: Corey Meunier

Course Code: Title	ASR102: MECHANICS OF FLIGHT
Program Number: Name	4067: AIRCRAFT STRUCT TECH
Department:	AIRCRAFT STRUCTURAL REPAIR
Semester/Term:	17F
Course Description:	This course will introduce the student to fixed and rotary wing theory of flight, and flight control systems. In-class presentations include topics that pertain to how an airfoil produces lift, how airplanes and helicopters fly and the flight control systems used in fixed wing and rotary wing aircraft.
Total Credits:	3
Hours/Week:	3
Total Hours:	48
Vocational Learning Outcomes (VLO's): Please refer to program web page for a complete listing of program outcomes where applicable.	#2. Demonstrate a working knowledge of the principles of aircraft design by applying theory and shop practice. #11. With the use of manuals quickly locate and pinpoint station locations on fuselage construction and wing structures.
Essential Employability Skills (EES):	#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources. #8. Show respect for the diverse opinions, values, belief systems, and contributions of others. #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 70%, B
Other Course Evaluation &	(a) Two multiple choice tests – each accounts for 45 percent of the final grade.



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Assessment Requirements:

Test #3 Mechanics of Flight
Test #5 Flight Control Systems

(b) Student presentation for “Flight Control Systems” – accounts for 10 percent of the final grade.

Grade
Definition Grade Point Equivalent
A+ 90 – 100% 4.00
A 80 – 89%
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.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Student Presentation: Flight Control Systems	10%
Test 3: Mechanics of Flight	45%
Test 5: Flight Control Systems	45%

Books and Required Resources:

Aviation Maintenance Technician Handbook: Airframe: Volume 1 by Federal Aviation Administration
ISBN: 9781560279501

Aviation Maintenance Technician Handbook: Airframe: Volume 2 by Federal Aviation Administration
ISBN: 9781560279525

Aviation Maintenance Technician Handbook: General by Federal Aviation Administration
ISBN: 9781619540255



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Course Outcomes and Learning Objectives:

Course Outcome 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.

Learning Objectives 1.

- 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
- discuss flight theory for rotary wing aircraft

Course Outcome 2.

Research and discuss various aircraft flight control systems as presented by both instructor and student groups. Rebalancing techniques of control surfaces will be presented.

Learning Objectives 2.

- identify primary and secondary control systems of a fixed wing aircraft and how they operate
- describe various systems and the components found in the system
- describe the flight control systems for helicopters
- research a complete flight control system using the supplied manufacturers training manuals and parts books
- identify which control system affects aircraft movement or pilot selection
- present personal assignment to the class pertaining to their system as assigned by the instructor
- discuss the purpose of spoilers, slats, slots and stall strips associated with



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wing components

- describe the purpose of rebalancing aircraft components after repair using the "static" balancing method

Date:

Friday, September 1, 2017

Please refer to the course outline addendum on the Learning Management System for further information.