



COURSE OUTLINE: ASR102 - MECHANICS OF FLIGHT

Prepared: Larry Canduro

Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	ASR102: MECHANICS OF FLIGHT
Program Number: Name	4067: AIRCRAFT STRUCT TECH
Department:	AIRCRAFT STRUCTURAL REPAIR
Semesters/Terms:	19F
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
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	4067 - AIRCRAFT STRUCT TECH
	VLO 2 Demonstrate a working knowledge of the principles of aircraft design by applying theory and shop practice.
Please refer to program web page for a complete listing of program outcomes where applicable.	VLO 11 With the use of manuals quickly locate and pinpoint station locations on fuselage construction and wing structures.
Essential Employability Skills (EES) addressed in this course:	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.
	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.
	EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 70%, B
Other Course Evaluation & Assessment Requirements:	(a) Two multiple choice tests - each accounts for 45 percent of the final grade. Test #3 Mechanics of Flight Test #5 Flight Control Systems



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

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

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
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.	1.1 describe how an aircraft produces lift using Bernoulli'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 chord, center 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, longitudinal and vertical stability 1.7 describe profile and induced drag as they affect aircraft flight 1.8 discuss flight theory for rotary wing aircraft
Course Outcome 2	Learning Objectives for Course Outcome 2
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.	2.1 identify primary and secondary control systems of a fixed wing aircraft and how they operate 2.2 describe various systems and the components found in the system 2.3 describe the flight control systems for helicopters 2.4 research a complete flight control system using the supplied manufacturers training manuals and parts books 2.5 identify which control system affects aircraft movement or pilot selection 2.6 present personal assignment to the class pertaining to their system as assigned by the instructor 2.7 discuss the purpose of spoilers, slats, slots and stall strips associated with wing components 2.8 describe the purpose of rebalancing aircraft components after repair using the static balancing method

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%

Date: August 29, 2019

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