

STUDENT NAME:

STUDENT ID. NO.

PROGRAMME: ABAE / ABAV / ABME / ABAME

ISSUE DATE: 27-Sep-23, Wednesday

SUBMISSION DATE: 25-Oct-23, Wednesday

MARK & FEEDBACK DATE: 08-Nov-23, Wednesday

Fall-2022 / ASSESSMENT (ASSIGNMENT 1)

MODULE TITLE:	BASIC AERODYNAMICS	MODULE CODE:	EG107
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ASSESSED LEARNING OUTCOMES

	LO1	Understand the properties and behaviour of air
	LO2	Understand the forces acting on an aircraft in subsonic flight
	LO3	Understand the design features of high-speed aircraft
✓	LO4	Understand how stability and control are achieved in conventional aircraft

Student Declaration

<u>Submission requirement:</u>	I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. All the sources from which information has been obtained for this assignment, have been referenced. I understand that making a false declaration is a form of malpractice. I further confirm that I have read and understood the Emirates Aviation University rules and regulations about plagiarism and copying and agree to be bound by them.
1. Signed cover sheet	
2. Assignment report	
3. Soft / Hard copy of turnitin report	

Student Signature:

Submitted on:

RESULT

QUESTIONS	Q1	Q2	Q3	Q4	Q5						OVERALL (/25)
LEARNING OUTCOMES	LO4										
TOTAL MARK	--	--	--	--	--						
ACHIEVED MARK											

Assessor's Overall Feedback:

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Assessor's Name:

Signature:

Date:

Submission Format

The submission should be in the form of an MS Word document with appropriate use of structure and referencing, as per the below:

1. Preferred font is Arial and size 10. Heading size can be increased but make sure to keep the same format throughout this report.
2. 1.5x spacing is required between sentences.
3. The first page should have an introduction to the assignment, which should also contain your views.
4. The body should follow next.
 - a. Notes should be typed and drawings presented neatly. Images/Pictures may be copied & pasted but need to be referenced.
 - b. Headings, Images/Pictures, Used equations must be numbered for traceability purpose.
5. A brief conclusion should be at the end with your comments and views.
6. The last page should have your reference sources. Preferable style - Harvard style. Always make sure to write the source of the copied images/pictures.
7. The assignment should not be bound or presented in a folder. It should simply be stapled with the cover sheet.

Plagiarism

Plagiarism is defined as the presentation of another person's work as your own. It is a particular form of cheating. Plagiarism must be avoided at all costs and students who break the rules, however innocently, may be penalised. It is your responsibility to ensure that you understand correct referencing practices. As a university level student, you are expected to use appropriate references throughout and keep carefully detailed notes of all your sources of materials for material you have used in your work, including any material downloaded from the Internet.

In this be the case, Emirates Aviation University considers plagiarism as theft and any student found to have plagiarised would be awarded an automatic fail for the piece of work submitted and may be excluded from further study at the University.

ASSIGNMENT TITLE:

Assignment Brief and Guidance

Scenario

Your new boss, who was recently appointed to run an aviation company asks you to provide a short report on the stability of the aircraft. This report would include precise technical information about the stability of the aircraft, also the influence of various controls and components on keeping the aircraft in its desired flight path.

Questions

1. Define the aircraft axes and degrees of freedom. Analyse the different manoeuvres that can be done by an aircraft along the different axes. (6 marks)
2. What is the static and dynamic stability? Discuss in detail the longitudinal, directional, and lateral stick fixed stability. (3 marks)
3. Discuss in detail about the low-speed and high-speed ailerons, spoilers and the speed brakes. (4 marks)
4. Describe the factors which influence the static stability of aircraft and relate them to individual cases. (6 marks)
 - a. Define the lateral and longitudinal dihedral and their effects on the stability of the aircraft.
 - b. Define the static margin, what would be the effect of the static margin on the stability of the aircraft.
 - c. Define the load factor, and describe the n-v Envelope. Discuss the constraints which dictate the load factor on the aircraft and pilot.
5. Describe and compare control systems of at least 2 aircraft types. (6 marks)
 - a. Identify the various control surfaces associated with the tail i.e. Horizontal and vertical stabilizer for each type and compare them.
 - b. What is the role of the Horizontal and vertical stabilizers in each type.
 - c. Compare the roles of Swept back wing, Swept forward wing, Tapered wing and slotted wing?