

## MODULE DESCRIPTION FORM

### DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

### ME201 AERO-DESIGN AND FLIGHT TEST

Module Registrar: Dr E Minisci <a href="mailto:edmondo.minisci@strath.ac.uk">edmondo.minisci@strath.ac.uk</a>	Taught To (Course): Cohorts for whom class is compulsory		
Other Lecturers Involved:	Credit Weighting: 10 (ECTS 5)	Semester: 2	
Assumed Prerequisites: 16231 Flight and Spaceflight	Compulsory class	Academic Level: 2	Suitable for Exchange: N

#### Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
24				10 (flight training course and test)			20	46	100

#### Educational Aim

This module builds on the initial study carried out in Flight and Space Flight 1. The taught part of the class is reinforced by flight experience and flight test.

This module aims to provide an introduction to the mechanics of flight of fixed winged aircraft. Using a combination of lectures, practical simulations, and assignments, students will develop a comprehensive understanding of flight mechanics principles and their application to real-world scenarios.

The flight experience is **mandatory**. To pass the module, a student must have satisfactorily completed the flight experience.

#### Learning Outcomes

On completion of the module the student is expected to be able to:

- LO1 Demonstrate a thorough understanding of the aircraft motion.
- LO2 Demonstrate a thorough understanding of the most critical manoeuvres.
- LO3 Demonstrate a thorough understanding of the stability of conventional aircraft.
- LO4 Demonstrate a practical understanding of the most critical manoeuvres and aircraft stability.

#### Syllabus

The module will teach the following:

1. The equations of motion in body-axis and wind-axis reference frames.
2. Avionics: flight Instruments
3. Aircraft performance: flight envelope;
4. Performance during glide and climb;
5. Range and endurance.
6. Take-off and landing.
7. Manoeuvring flight.
8. Longitudinal and lateral-directional static stability.
9. Concepts of dynamic stability.

## Assessment of Learning Outcomes

### Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

#### LO1

C1 Students should be able to understand and describe the equation of motions for a general fixed-wing aircraft.

C2 Students should be able implement/program and integrate the equation of motions.

#### LO2

C1 Students should be able to understand and describe the most critical manoeuvres.

C2 Students should be able implement/program and analyse the most critical manoeuvres.

#### LO3

C1 Students should be able to understand and explain the main concepts of static and dynamic stability.

C2 Students should be able to analyse the stability of a general aircraft using the appropriate tools.

#### LO4

C1 Students should be able to link the theory about aircraft manoeuvring and stability, and the real world experience.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

### Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/professionalservices/staff/policies/academic/> )

Assessment is by two coursework assignments; students should expect to spend a considerable amount of effort completing these as they form an important learning exercise as well as an assessment unit.

Informal feedback is provided directly within lectures, with self and peer-directed feedback encouraged during the course to the extent that it does not impinge on collaborative working. Written feedback is provided on returned coursework reports.

### Assessment Method(s) Including Percentage Breakdown and Duration of Exams (*individual weightings*)

Examination				Coursework		Practical	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
				2 courseworks	90% each (30% + 60%)	1	Pass
				2 online time constrained quizzes/tests	10% (5% each)		
*				* LO1, LO2, LO3		*LO4	

\* **L/Os:** Indicate which Learning Outcomes (LO1, LO2, etc) are to be assessed by exam/coursework/practical/project as required.

### Coursework / Submissions deadlines (*academic weeks*):

Coursework 1 deadline in week 7, coursework 2 deadline in week 11.

### Resit Assessment Procedures:

Submission of alternate ^coursework prior to commencement of the July/August exam diet.

^^Students must contact the module Registrar for details as soon as results confirm that a resit is required.

### PLEASE NOTE:

Students must complete the flight training course and achieve a 'PASS' for the flight test and gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-assessed prior to the July/August exam diet. This re-assessment will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

### Recommended Reading

\*\*\*Purchase recommended    \*\*Highly recommended reading    \*For reference

"Introduction to Flight" by Anderson, McGraw Hill, ISBN 0-07-109282-X

### Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
		Check timetable webpages for details

Session: 2024/25
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**Approved:**

<b>Programme Lead/Director Signature:</b> Dr A McLaren and Dr G Houston-Scott
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<b>Date of Last Modifications:</b> 02/08/2024
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(MAE template updated July 2024)

## MODULE TIMETABLE

Module Code:

ME201

Module Title:

Aero-Design and Flight Test

### Brief Description of Assessment:

- Two online, time constrained quizzes with 10% contribution towards the final module mark (5% for each quiz) – shown as ‘Online Test’ below
- Two coursework submissions with 90% contribution towards the final module mark (30% for Coursework 1, and 60% for Coursework 2)

**Note:** All assessments will be completed before the April/May exam period.

Each coursework is linked to a prerequisite online quiz outlined above which students must pass (a minimum mark of 40/100 must be achieved) before the related coursework can be submitted. Further details are outlined below:

- Quiz 1 will open to complete in Week 5 (one attempt only) and a pass mark must be achieved to allow students to submit Coursework 1. If a pass mark is not achieved for Quiz 1, the student will be unable to submit Coursework 1.
  - Coursework 1 will be released at the start of week 4 with submission due at the end of week 5.
- Quiz 2 will open for students to complete in Week 11 (one attempt only) and a pass mark must be achieved to allow students to submit Coursework 2. If a pass mark is not achieved for Quiz 2, the student will be unable to submit Coursework 2.
  - Coursework 2 will be released at the start of week 9 with submission due at the end of week 11.

Satisfactory completion **(PASS)** of the flight test **is essential to pass the module.**

### Assessment Timing:-

Indicated on the table below are the start/submission dates for each assignment/project and the timing of each exam/assessment.

**Please note: Timings could change during unforeseen periods of disruption; this should only be used as a guide.**

Semester Two	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Course work Set	Online Test  Course work Submit	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Course work Set  Lab	Lab Report Submission	Online Test  Course work Submit	Choose an item.  Choose an item.