

## MODULE DESCRIPTION FORM

### DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

### 16309 AERO-DESIGN 2

Module Registrar: Dr M Stickland <a href="mailto:matt.stickland@strath.ac.uk">matt.stickland@strath.ac.uk</a>	Taught To (Course): Cohorts for whom class is compulsory		
Other Lecturers Involved:	Credit Weighting: 20 (ECTS 10)	Semester: 2	
Assumed Prerequisites: 16351 Flight and Spaceflight 2, 16259 Aero Design 1, ME201 Aero Design and Flight Test, 16231 Flight and Spaceflight 1	Compulsory class	Academic Level: 3	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
			200						200

#### Educational Aim

It is essential that students should have experience in applying engineering principles in a design context. It is the aim of this class to have students experience the application of knowledge, gained primarily from previous classes, to various stages of the design process together with new knowledge gained as part of project completion.

#### Learning Outcomes

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

- LO1 Apply and implement methods for the analysis of flight mechanics and aerodynamics
- LO2 Develop a concept from inception to detail design level
- LO3 Examine and implement time-planning and scheduling
- LO4 Examine the design process

#### Syllabus

The class consists of a semester-long design/build/test group exercise.

The projects available each year will depend upon the staff involved in this class. Typical projects which might be available are:

Design a remote controlled UAV to carry the maximum payload to mass ratio around a specified course

or

Design a remote controlled UAV to carry the most tennis balls around a specified course on one charge of a specified battery.

***Please note that group participation is dependent on satisfactory peer mark in 16351.***

#### 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 Apply and implement methods for the analysis of flight mechanics and aerodynamics
- C1 By designing the model aircraft the students will demonstrate a deeper understanding

LO2	Develop a concept from inception to detail level
C1	Creation of the aircraft will demonstrate the students' ability to take a design from concept through to detailed design
LO3	Examine and implement time-planning and scheduling
C1	Create a Gantt chart to demonstrate time and project planning
C2	Keep a log book to track individual time and project planning
LO4	Examine the design process
C1	After initial flight test, demonstrate understanding of performance, identifying and implementing modifications to the design as required

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 carried out at the end of the semester on the following basis:

Individual Logbook (including organisation of time) + technical log	10%
Design Presentation	10%
Peer Mark	10%
Report	35%
Drawings	20%
Overall Design/build quality/Performance	15%

Feedback will be provided throughout the semester by:

- Informal discussion about the group's aircraft's design and manufacture.
- Constructive criticism of the group presentation.
- Comments on the technical content and presentation of the group's final report

A final mark will not be awarded until the group technical log is complete.

NB: A peer mark will be taken every two weeks and a student with a peer mark below 50% will be given an individual oral examination to establish if and why they are not contributing to the project. If a student does not contribute to the progress of the group an individual project may be assigned at any time during the semester. The size of this project will depend on when it is set.

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

Examination				Coursework		Practical		Project	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting	Number	Weighting
*				*		*		1	100%
								* LO1-LO4	

\* **L/Os:** Indicate which Learning Outcomes (L01, L02, etc) are to be assessed by exam/coursework/practical/project as required.

**Coursework / Submissions deadlines (*academic weeks*):** To be confirmed

#### Resit Assessment Procedures:

Requirement to carry out an additional design project as agreed with the Registrar and assessed by submission of alternate ^coursework in the form of a design report, prior to commencement of the 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 gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-assessed before the August diet. This re-assessment will consist of an additional design project and submission of a design report. No marks from any previous attempts will be transferred to a new resit attempt.**

## Recommended Reading

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

\*\* "Aircraft Performance" by Mair and Birdsall, Cambridge, ISBN 0521362644

or

\*\* "Aircraft Performance and Design" by Anderson, McGraw Hill, ISBN 0-07-001971-1

## Additional Student Feedback

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

Date	Time	Room No
		Check timetable webpages for details

Session: 2021/22

## Approved:

**Course Director Signature:    Dr E Henderson (SG)**

**Date of Last Modifications:    September 13, 2021**

(Updated July 2021)

## MODULE TIMETABLE

**Module Code:**

**16309**

**Module  
Title:**

**Aero-Design 2**

### Brief Description of Assessment:

Individual Logbook (including organisation of time) + technical log	10%
Design Presentation	10%
Peer Mark	10%
Report	35%
Drawings	20%
Overall Design/build quality/Performance	15%

Exact timings of assessments will be communicated during the semester.

### Assessment Timing:-

Indicate on the table below the start/submission dates for each assignment/project and the timing of each exam/assessment using the dropdowns provided.

**Please note: Timings can and will change, this should only be used as a guide.**

Semester	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
<b>Two</b>	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Peer Review	Choose an item. Choose an item.	Choose an item. Choose an item.	Peer Review	Choose an item. Choose an item.	Choose an item. Choose an item.	Present ation Choose an item.	Drawings Report Tech Log Peer review	Choose an item.