MODULE DESCRIPTION FORM

DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

ME316 Design 3A

Module Registrar: Mr Chris Cameron chris.cameron@strath.ac.uk	**Taught To (Course): Year 3 Mechanical and Aero-Mechanical Engineering**		
Other Lecturers Involved: Dr Tugrul Comlekci	**Credit Weighting: 10**	**Semester: 1**	
Assumed Prerequisites: ME105 Mech Eng Design; ME212 Materials Eng & Design; ME214 Mech Eng Design 2 OR 16231 Flight and Spaceflight 1; 16259 Aero Design 1; ME201 Aero Design and Flight Test	**Compulsory module**	**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**
10	10		80						100

Educational Aim

This module aims to provide students with experience in applying engineering science principles in a design context. It is the aim of this class to have students experience the application of knowledge, gained primarily from previous modules in mechanical and/or aero-mechanical engineering, to the initial stages of the design process including, design specification from interpretation of a design brief, concept generation and selection, performance analysis and decision support in the selection of a candidate design solution.

Learning Outcomes

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

LO1 Experience team working in implementing group time planning and individual task scheduling.

LO2 Develop a concept from inception to detailed design using a formalised engineering design process.

LO3 Develop decision making strategies using mechanical and/or aerodynamic engineering principles.

LO4 Appreciate design as a process of iteration and optimisation.

Syllabus

The module consists of a semester-long group design 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,

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

Design a small rooftop wind turbine to generate the most electrical power from local wind currents.

Design a small robotic arm to perform a lifting and placement task in the most efficient way.

Assessment of Learning Outcomes

Criteria

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

Please note that due to the integrated nature of the group design activity the learning outcomes are not assessed independently. Assessment is therefore carried out part way through and at the end of the semester on the following basis:

1) Group Concept Development Presentation, week 6 – 45%

2) Group Prototype Design Presentation, week 11- 55%

Assessments 1 and 2 consist of a Group presentation, and questions and answers sessions with the module facilitators. During each session students should collectively demonstrate their understanding of the design process as defined by LO1 to LO4 through the presentation and explanation of their group solution to the specific design problem.

Assessment 3, Peer Assessment is used to provide a mark which represents an individual's engagement and contribution in advancing the Design challenge.

For this module, peer assessment will be applied to the group assignment. Students will evaluate their peers' contributions to the assignment using Myplace. The students' grade will be determined by combining the staff grade for that assignment with the students' weighted contribution – determined from each member's evaluation of the student.

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/)

Ongoing formative feedback will be provided by verbal discussion at weekly timetabled group working sessions based in the design studio. Summative feedback will be provided by mark awarded at the project consolidation stage and for the group portfolio presented upon completion of the detailed design.

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*):
1) Concept Development Presentation, week 6
2) Prototype Design Presentation, week 11
3) Peer Assessment, week 11

Resit Assessment Procedures:
Submission of alternate ^^coursework(s) 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 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 a coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

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

Study stream dependent.

Aero:
** “Fundamentals of Flight” by Shevell, R.S., Prentice Hall, ISBN 133329178
*** “Introduction to Flight ISE” by Anderson, J., Bowden, M.L., McGraw Hill, 9th Edition ISBN 1260597997 · 9781260597998 (2021)
* “General Aviation Aircraft Design, Applied Methods and Procedures,” by Gudmundsson, S., Elsevier, 2022, ISBN: 978-0-12-818465-3, https://doi.org/10.1016/C2018-0-03861-X

Mechanical:
*” Total Design: Integrated Methods for Successful Product Engineering”, Pugh, Prentice Hall; 1st edition (2 Oct. 1990) , ISBN-10 : 0201416395 ,ISBN-13 : 978-0201416398.
*” Shigley’s Mechanical Engineering Design, Eighth Edition”, McGraw-Hill, ISBN: 0-390-76487-6

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

Date	Time	Room No

Session: 2025/26

Approved:

Programme Lead/Director Signature: Dr Andrew McLaren
Date of Last Modifications: 04 August 2025

(MAE template updated June 2025)

MODULE TIMETABLE

Module Code:	**ME316**	**Module Title:**	**Design 3A**

Brief Description of Assessment:
1) Group Concept Development Presentation, week 6 – 45%
2) Group Prototype Design Presentation, week 11- 55%
Peer Assessment (after final presentation)

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 One	W&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.	Presentation	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Presentation	Peer Assessment

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.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item.