

## MODULE DESCRIPTION FORM

### DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

## ME517 SPACEFLIGHT SYSTEMS

<b>Module Registrar:</b> Prof M Macdonald <a href="mailto:malcolm.macdonald.102@strath.ac.uk">malcolm.macdonald.102@strath.ac.uk</a>	<b>Taught To (Course):</b> Cohorts for whom class is optional		
<b>Other Lecturers Involved:</b>	<b>Credit Weighting:</b> 10	<b>Semester:</b> 2	
<b>Assumed Prerequisites:</b> 16351 Flight and Spaceflight 2	<b>Optional class</b>	<b>Academic Level:</b> 5	<b>Suitable for Exchange:</b> Y

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

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
20							50	30	100

#### Educational Aim

This class is designed to provide an overview of spaceflight systems. An overview of the complete spacecraft lifecycle from proposal, through delivery and operations is covered, along with the function and purpose of the spacecraft sub-system level components. In addition to the technical detail of spaceflight systems, the importance of ancillary skill-sets is introduced such as project management. Finally, the various elements of the class will be brought together through the production of competitive proposals for a typical spaceflight system development program.

#### Learning Outcomes

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

- LO1 An understanding of the sub-system level components on-board a spacecraft
- LO2 An understanding of the methods employed in spacecraft design
- LO3 The ability to prepare a funding proposal for analysis of a spacecraft system

#### Syllabus

The module will teach the following:

- 1) Spacecraft (sub-)system
- 2) Spacecraft design and trade-offs
- 3) Spaceflight systems lifecycle
- 4) Proposal writing, production and presentation

#### Assessment of Learning Outcomes

##### Criteria

##### LO1-LO4

A clear understanding of each learning outcome must be communicated in the funding proposal developed, and submitted for assessment twice, as the unit of assessment within the class.

Various sections of the funding proposal will require presentation and assessment of proposed systems, which are aligned to the LO's. Through the submission, students will be required to fully discuss aspects of the systems and methods employed which will allow assessment of whether the LOs have been met.

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/staff/policies/academic/> )

Assessment is by production of a funding proposal in response to an actual Invitation to Tender from the European Space Agency. The funding proposal is assessed using the published assessment guidelines of the European Space Agency.

Vital informal feedback is provided at lectures, failure to attend these will result in loss of feedback. Self and peer-directed feedback is also encouraged. Each students funding proposal is submitted for assessment twice, with a feedback session after the first submission providing critical mid-term assessment and direction, this feedback is given as a class wide discussion.

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

Examination				Coursework		Practical		Project	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting	Number	Weighting
				1	10%			1	90%
*				*		*		*	

\* **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):

Late submission will not be accepted, deadlines will be communicated in lectures

### Resit Assessment Procedures:

Submission of alternate coursework(s) prior to commencement of the August exam diet.

### PLEASE NOTE:

Students must gain a summative mark of 50% to pass the module. Students who fail the module at the first attempt will be re-assessed during the August 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

\*\*\* Macdonald & Badescu, "The International Handbook of Space Technology", ISBN 978-3-642-41101-4  
<http://www.springer.com/us/book/9783642411007> (free download on campus)

or

\*\* Griffin & French, "Space Vehicle Design", ISBN 978-1563475399

### Additional Student Feedback

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

Date	Time	Room No
		Check timetable webpages for details

Session: 2019/20

### Approved:

Course Director Signature: Dr Stuart Grey

Date of Last Modifications: 06/09/2019

## MODULE TIMETABLE

Module Code:

**ME517**

Module Title:

**Spaceflight Systems**

### Brief Description of Assessment:

Funding proposal in response to an actual Invitation to Tender from the European Space Agency

### 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. Dropdowns can be left blank. Add extra notes below the dropdowns.

**Please note: Timings can and will change, 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.	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.

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