MODULE SPECIFICATION

Part 1: Information			
Module Title	Spaceflight		
Module Code	UFMFCH-15-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Contributes towards	Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Aerospace Engineering (Systems) [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Aerospace Engineering (Design) [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Aerospace Engineering (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Aerospace Engineering (Systems) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

The module covers theoretical and practical aspects of spaceflight mission and vehicle design and operation

Educational Aims: See Learning Outcomes.

Outline Syllabus: This module will cover:

- Planetary operations: launch, re-entry and landing; rocket design; theoretical and numerical modelling techniques for Hypersonic aerothermodynamics, atmospheric drag
- Supersonic flow theory. Use of the supersonic windtunnel for external aerodynamics.
- Mission planning and operations including trade-off studies. Also conceptual spacecraft design and environmental considerations
- In-space operations: orbital mechanics and transfers, thermal budgets, space debris

Teaching and Learning Methods: See Outline Syllabus and Assessment.
Each student is timetabled for a one one-hour lecture and a two-hour workshop per week.

Part 3: Assessment

Component A is one hour viva for each group where students are questioned on their technical knowledge and on the decisions made in creating the mission plan and its operation.

Component B is a group report which is submitted before the viva, This report allows the students to demonstrate their successful application of the principles and methods provided in the module, and it enables them to present their worked solution to the given problem.

Group work marks will be moderated using the peer assessment strategy set out in the EDM Group Work Policy

The resit assessment will follow the same format as the first sit but will involve an individual report and an individual viva.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Project - Component B		75 %	Assignment in spaceflight design and systems. The size of the group report is up to 6000 words with an additional 500 words from each student on their reflection and individual understanding of the process.
Presentation - Component A	✓	25 %	A group viva with individual questioning to each student (1 hour)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Project - Component B		75 %	Assignment in flight testing
Presentation - Component A	✓	25 %	Individual Presentation (15 minutes)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

	Module Learning Outcomes
MO1	Integrate a wide and mission driven knowledge base of multi-disciplinary space engineering for developing and analysing space missions (SM1p, SM3p, EP4p)
MO2	Conceive, define and evaluate space missions (EA4p)
MO3	Use a variety of simulation tools for mission and vehicle design from concept to operation (SM2p, EA3p)
MO4	Validate and analyse designs created in the operating space environment and in planetary atmospheres. (EA2p, D3p, ET4p)

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	114
Total Independent Study Hours:	114
Scheduled Learning and Teaching Hours:	
Face-to-face learning	36
Total Scheduled Learning and Teaching Hours:	36
Hours to be allocated	150
Allocated Hours	150

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/modules/ufmfch-15-3.html