STUDENT AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Information			
Module Title	Further Aero-Propulsion		
Module Code	UFMFYU-15-3	Level	Level 6
For implementation from	2022-23		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	
Department	FET Dept of Engineering Design & Mathematics		
Module Type:	Standard		
Pre-requisites	Fundamental Aero-Propulsion 2021-22		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description

Overview: The module provides further and more advanced knowledge and understanding of the thermodynamics and engine performance through components analysis.

The main focus is on the engineering design and analysis of components in the main gas path, i.e. compressor, combustion chamber, and turbine as well as further emphasis on nozzles and diffusers, and related emerging technologies.

Educational Aims: The aim of this module is to provide advanced technical underpinning in thermodynamics applied to engine design and performance.

Outline Syllabus: Indicative curriculum:

Combustor and combustion physics
Turbomachinery (Euler Turbine Equation, Velocity Triangle, Compressors, Turbines)
Blades interaction
Blade cooling
Other components (diffusers, nozzles, etc.)
Introduction to electric propulsion

Teaching and Learning Methods: In order to ensure secure knowledge of technical content that is then applied in context, the module will combine lectures and lectorials to learn concepts and principles, as well as practicals to allow students to experience working on real engineering challenges.

Part 3: Assessment

The module will be assessed using two components.

Component A is a written end-of-semester exams to assess mathematical competencies in an engineering context as well as fundamental understanding of various aspects of gas turbine engine performance.

Component B is a group project involving the use of simulation and modelling tools will be used to expose the students to modern methodological approaches and real engineering problems. Submission of presentation slides with supporting work files and a 30 minute group presentation including Q/A.

A peer review process will be used to moderate the group work mark in accordance with Department's Group Work Policy.

The resit assessment will differ from the first sit assessment in that component B will involve an appropriately scaled individual project. A written submission on a re-sit project with supporting work files. Student does not need to give a presentation.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	50 %	Written examination (2 hours)
Presentation - Component B		50 %	30 minute group presentation including Q/A.
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	50 %	Written examination (2 hours)
Report - Component B		50 %	Written submission on a re-sit project (10 pages)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will achieve the following learning outcomes:

Module Learning Outcomes	**Reference**
Assess engine performance at component level by applying appropriate knowledge of aerodynamics and thermodynamics. (SM3b, EA2, P2)	MO1
Model the aero-thermo flow physics on engine components through analytical or numerical methods. (EA3b, EA4b, P3)	MO2
Develop appropriate design solution at engine component level within various constraints and limitations. (D3b, P4, P8)	MO3

Contact Hours

Independent Study Hours:

Independent study/self-guided study	114
Total Independent Study Hours:	114

	Scheduled Learning and Teaching Hours:
	Laboratory work: 12 Lectorials: 12 Lectures: 12
	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/index.html

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21 Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21 Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21 Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2020-21