MODULE SPECIFICATION

Part 1: Information			
Module Title	Energy and Thermodynamics		
Module Code	UFMFF3-15-1	Level	Level 4
For implementation from	2019-20		
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		
Module type:	Standard		

Pre-requisites	None
Excluded Combinations	None
Co- requisites	None
Module Entry requirements	None

Part 2: Description

Educational Aims: The study of thermodynamics forms one of the disciplines that underpin many areas of engineering. This module is designed to provide a solid foundation of knowledge which will be used to extend specialist knowledge in future years.

Outline Syllabus: Concepts of pressure and temperature, work, heat and energy, absolute temperature and pressure.

Concepts of total and specific energy etc; notation; units; problem solving.

Closed Systems; analysis of closed systems; internal energy, the NFEE.

Work producing processes, process laws, work equations.

Open systems; analysis of open systems; the SFEE and continuity.

Properties of ideal gases, gas laws, property relations.

Problems involving gases.

Water and Steam; phase change; definitions of state; use of Steam Tables; properties of 2-phase mixture.

Problems involving water and steam.

Entropy; pV and TS diagrams.

Power Cycles: Otto, Brayton, Rankine.

Teaching and Learning Methods: Large group lecture supported by small group tutorial sessions. Study time outside of contact hours will be spent on going through exercises and example problems.

Scheduled learning includes lectures and tutorials.

Independent learning includes hours engaged with essential reading, exercise preparation and completion etc.

Hours
Contact: 36
Assimilation and skill development: 70
Coursework preparation: 0
Exam preparation: 44
Total: 150

Part 3: Assessment

Component A:
Assessed via end of semester Exam 3 hours (100%) to include sufficient time for students to read and assimilate associated data sheets. Summative assessment.

Formative assessment (not contributing to module mark) is provided via support in tutorials.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	100 %	End of semester exam (3 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	100 %	End of semester exam (3 hours)

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**
Use specialist engineering knowledge and understanding of key principles and results in thermodynamics	MO1
Apply appropriate theoretical methods to the analysis of problems in thermodynamics, based on knowledge of the relevant engineering principles	MO2
Show cognitive skills with respect to modelling and simplifying real problems in thermodynamics, and applying mathematical methods of analysis	MO3

	Apply appropriate theoretical and practical methods in problem formulation and decision-making, interpreting experimental results	MO4

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/ufmff3-15-1.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Aerospace Engineering (Design) {Apprenticeship} [Sep][PT][UCW][4yrs] BEng (Hons) 2019-20

Mechanical Engineering and Vehicle Technology [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Mechanical Engineering and Vehicle Technology [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Design) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Mechanical Engineering [Sep][PT][BTC][3yrs] FdSc 2018-19

Automotive Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

Automotive Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19

Automotive Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Automotive Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Aerospace Engineering [Sep][PT][UCW][8yrs] MEng 2018-19

Mechanical Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng 2018-19

Mechanical Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng 2018-19

Mechanical Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

Mechanical Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19

Aerospace Engineering with Pilot Studies (Design) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Systems) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Systems) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Aerospace Engineering [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering (Design) [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering (Manufacturing) [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering (Systems) [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Design) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Aerospace Engineering (Manufacturing) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Manufacturing) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

Aerospace Engineering Manufacturing [Sep][PT][UCW][4yrs] FdSc 2018-19