



## **Module Specification**

### **Energy and Thermodynamics**

Version: 2021-22, v1.0, 03 Aug 2020

#### **Contents**

<b>Module Specification .....</b>	<b>1</b>
<b>Part 1: Information .....</b>	<b>2</b>
<b>Part 2: Description .....</b>	<b>2</b>
<b>Part 3: Teaching and learning methods .....</b>	<b>3</b>
<b>Part 4: Assessment.....</b>	<b>5</b>
<b>Part 5: Contributes towards .....</b>	<b>5</b>

## Part 1: Information

**Module title:** Energy and Thermodynamics

**Module code:** UFMFF3-15-1

**Level:** Level 4

**For implementation from:** 2021-22

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Engineering Design & Mathematics

**Partner institutions:** None

**Delivery locations:** City of Bristol College, Frenchay Campus, Global College of Engineering and Technology (GCET), National Economics University Vietnam, University Centre Somerset, University Centre Weston

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Not applicable

**Features:** Not applicable

**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.

### **Part 3: Teaching and learning methods**

**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

**Module Learning outcomes:**

**MO1** Use specialist engineering knowledge and understanding of key principles and results in thermodynamics

**MO2** Apply appropriate theoretical methods to the analysis of problems in thermodynamics, based on knowledge of the relevant engineering principles

**MO3** Show cognitive skills with respect to modelling and simplifying real problems in thermodynamics, and applying mathematical methods of analysis

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

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmff3-15-1.html) via the following link <https://uwe.rl.talis.com/modules/ufmff3-15-1.html>

## Part 4: Assessment

**Assessment strategy:** 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.

**Assessment components:**

### **Examination (Online) - Component A (First Sit)**

Description: Online Examination (3 hours)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

### **Examination (Online) - Component A (Resit)**

Description: Online Examination (3 hours)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

## Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aerospace Engineering Manufacturing [Sep][PT][UCW][3yrs] FdSc 2020-21

Aerospace Engineering [Sep][PT][Frenchay][8yrs] - Not Running MEng 2020-21

Aerospace Engineering (Systems) [Sep][PT][Frenchay][8yrs] - Not Running MEng  
2020-21

Aerospace Engineering (Design) [Sep][PT][Frenchay][8yrs] - Not Running MEng  
2020-21

Aerospace Engineering (Manufacturing) [Sep][PT][Frenchay][8yrs] - Not Running  
MEng 2020-21

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng  
(Hons) 2020-21

Aerospace Engineering (Manufacturing) {Foundation} [Sep][SW][Frenchay][5yrs] -  
Not Running BEng (Hons) 2020-21

Aerospace Engineering (Manufacturing) {Foundation} [Sep][FT][Frenchay][4yrs] -  
Not Running BEng (Hons) 2020-21

Aerospace Engineering (Design) {Foundation} [Sep][SW][Frenchay][5yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering (Systems) {Foundation} [Sep][SW][Frenchay][5yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][PT][Frenchay][6yrs]  
- Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Design) [Sep][PT][Frenchay][6yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][PT][Frenchay][6yrs] - Not  
Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies [Sep][PT][Frenchay][6yrs] - Not Running  
BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] -  
Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Systems) {Foundation}  
[Sep][SW][Frenchay][5yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Systems) {Foundation}  
[Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation}  
[Sep][SW][Frenchay][5yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Design) {Foundation}  
[Sep][SW][Frenchay][5yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation}  
[Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Design) {Foundation}  
[Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Automotive Engineering {Foundation} [Sep][SW][Frenchay][6yrs] - Not Running  
MEng 2020-21

Automotive Engineering {Foundation} [Sep][FT][Frenchay][5yrs] - Not Running MEng  
2020-21

Automotive Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng  
(Hons) 2020-21

Automotive Engineering {Foundation} [Sep][SW][Frenchay][5yrs] - Not Running  
BEng (Hons) 2020-21