Module Specification

Thermofluids

Version: 2023-24, v3.0, 12 Jul 2023

Contents

Part 1: Information

Module title: Thermofluids

Module code: UFMFNS-15-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The principles governing the flow of fluids and fluid dynamics are an essential part of an engineer's knowledge base, enabling them to design, solve and maintain a variety of problems that occur throughout engineering such as the design of efficient pumping systems, processing plant and heat exchange technologies.

The approach taken is to make sure that theory is underpinned by experiment and observation so that students can properly understand the mechanisms at work. The

module is designed to provide a solid foundation of knowledge, with practical exercises that reinforce and will enable the extension to specialist knowledge in future years.

Features: Not applicable

Educational aims: Aim of this module is to introduce thermodynamics, heat transfer and fluid dynamics which underpin fundamental scientific methods and engineering applications.

Outline syllabus: First Law of Thermodynamics
Systems, Energy, Processes, Properties and Thermodynamic Property Relationships
Non-Flow Energy Equation (NFEE)
Gas Laws
Non-flow Vapour Processes
Basic Heat Transfer
Hydrostatics and Buoyancy
Dimensional Analysis
Incompressible flow

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching and learning methods will involve interactive lectures with formative feedback, hands-on laboratory experiments designed to promote self-learning and self-paced peer assisted work groups

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

MO1 Describe and explain thermofluid principles and the associated methodology necessary to underpin, and enable appreciation of, relevant engineering applications (SM1b)

MO2 Apply practical and laboratory skills relevant to thermofluid processes (P3)

MO3 Demonstrate the ability to work with experimental technical uncertainty in a laboratory environment (P8)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 108 hours

Laboratory work = 6 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

The assessment strategy is designed to integrate physical principles and concepts with experiments and applications.

Online assignment: A series of e-assessments that allow students to practice and demonstrate understanding of underlying principles and calculation methods.

Presentation: An integrative assessment that pulls together experiment and theory. Students are presented with outline scenario(s) and are given 30 minutes to prepare an answer. A 20 minute oral examination is then used to explore understanding of fluid and thermodynamics principles and applications.

The resit assessment takes the same form as the first sit assessment.

Assessment tasks:

Presentation (First Sit)
Description: Individual presentation of solution to set exercise(s).
30 minutes preparation followed by 20 minute oral examination.

Weighting: 80 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Online Assignment (First Sit)
Description: Series of e-assessments on fluid and thermodynamics calculations
Weighting: 20 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Presentation (Resit)
Description: Individual presentation of solution to set exercise(s).
30 minutes preparation followed by 20 minute oral examination.
Weighting: 80 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Online Assignment (Resit)
Description: Series of e-assessments on fluid and thermodynamics calculations
Weighting: 20 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [COBC] BEng (Hons) 2023-24

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [UCW] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] MEng 2023-24

Mechanical Engineering {Apprenticeship-UCW} [UCW] FdSc 2023-24

Mechanical Engineering {Apprenticeship-UCS} [UCS] FdSc 2023-24

Automotive Engineering [Frenchay] BEng (Hons) 2023-24

Automotive Engineering [Frenchay] MEng 2023-24

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23

Mechanical Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23

Mechanical Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2022-23

Mechanical Engineering {Apprenticeship-GlosColl} [GlosColl] FdSc 2022-23

Mechanical Engineering [Sep][PT][Frenchay][6yrs] BEng (Hons) 2021-22

Mechanical Engineering [Sep][PT][Frenchay][7yrs] MEng 2021-22