Module Specification

Thermofluids

Version: 2024-25, v4.0, 02 Dec 2024

Contents

Part 1: Information

Module title: Thermofluids

Module code: UFMFNS-15-1

Level: Level 4

For implementation from: 2024-25

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

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 heat and fluids (Thermodynamics, Heat Transfer 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 plants, cooling and air-conditioning systems, engines 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: Systems, Energy, Processes, and Thermodynamic Property Relationships
First Law of Thermodynamics
Non-Flow Energy Equation (NFEE)
Gas Laws
Non-flow Vapour Processes
Basic Heat Transfer
Hydrostatics and Buoyancy
Dimensional Analysis
Incompressible flow (Continuity, Bernoulli's principle)

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 tutorial 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.

MO2 Apply practical and laboratory skills relevant to thermofluid processes.

MO3 Demonstrate the ability to work with experimental technical uncertainty in a laboratory environment.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 108 hours

Laboratory work = 6 hours

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 strategy for this module is designed to integrate physical principles and concepts with experiments and applications.

Online examination: A combination of questions that require numerical calculations and essay type answers allow students to demonstrate understanding of underlying principles, experimentation aspects, application of theory and calculation methods.

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

Assessment tasks:

Examination (Online) (First Sit)
Description: Written exam answers will be submitted via Blackboard.
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Examination (Online) (Resit)
Description:
Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

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

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

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

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [COBC] BEng (Hons) 2024-25

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [UCW] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] MEng 2024-25

Mechanical Engineering {Apprenticeship-UCW} [UCW] FdSc 2024-25

Mechanical Engineering {Apprenticeship-UCS} [UCS] FdSc 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

Automotive Engineering [Frenchay] MEng 2024-25

Automotive Engineering [Frenchay] - Withdrawn MEng 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

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

Mechanical Engineering with Manufacturing {Apprenticeship-UCW} [UCW] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] MEng 2022-23

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