Module Specification

Fluid Dynamics

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Part 1: Information

Module title: Fluid Dynamics

Module code: UFMFG3-15-1

Level: Level 4

For implementation from: 2022-23

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), 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: Fluid flow analysis is one of the disciplines that underpin many areas of engineering. This module is designed to provide a solid foundation of knowledge, with practical exercises to reinforce which will be used to extend specialist knowledge in future years.

Outline syllabus: Introduction to fluid dynamics, pressure, density, hydrostatic pressure

Volumetric and mass flow rates, continuity and Bernoulli's equation

Flow measurement devices and calculations

Dimensional analysis for engineering problems

Flow types: laminar and turbulent flow, characteristics

Solving laminar flow problems

Solving turbulent flow problems

Minor losses in pipe networks

Fluid machines (to calculate operating point in terms of volumetric flow rate) and calculate efficiency

Fluid momentum problems

Introduction to basic aerodynamics

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.

Lab sessions (small groups) will provide experience of empirical methods and techniques of experimental engineering.

Scheduled learning includes lectures, tutorials and laboratory session.
Approximate time:
Lectures: 24 hours
Tutorials: 12 hours
Laboratory: 2 hours

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

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

MO1 Show a detailed knowledge and understanding of key principles in fluid dynamics analysis

MO2 Demonstrate an understanding and knowledge of modelling and solving numerical problems in fluid dynamics, based on knowledge of the relevant engineering principles

MO3 Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of fluid dynamics engineering problems

MO4 Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis

MO5 Demonstrate key transferable skills in problem formulation and decision making, interpreting experimental results

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 112 hours

Face-to-face learning = 38 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufmfg3-15-1.html

Part 4: Assessment

Assessment strategy: Component A:
Assessed via end of semester Exam to assess underlying concepts, principles and applications.

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

The GCET delivery of this exam is a 3 hour exam. It was agreed that GCET can deliver the exam in a different way to UWE for in-country reasons for 2021/22 and 2022/23 providing there is no change to the UWE assessment during this time.

Assessment components:

Examination (Online) - Component A (First Sit)
Description: Online Examination
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Examination (Online) - Component A (Resit)
Description: Online Examination
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechanical Engineering [Sep][FT][UCS][2yrs] FdSc 2022-23

Mechanical Engineering [UCS] FdSc 2022-23

Mechanical Engineering and Technology (Manufacturing) {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Manufacturing) {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Vehicle Technology {Foundation} [Feb][FT][GCET][4yrs] - Withdrawn BEng (Hons) 2021-22

Mechanical Engineering and Vehicle Technology {Foundation} [Oct][FT][GCET][4yrs] - Withdrawn BEng (Hons) 2021-22

Mechanical Engineering [Sep][PT][Gloscoll][3yrs] FdSc 2021-22