MODULE SPECIFICATION

Part 1: Information			
Module Title	Fluid Dynamics		
Module Code	UFMFG3-15-1	Level	Level 4
For implementation from	2018-19		
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		
Contributes towards	Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][PT][Frenchay][4yrs] BEng (Hons) 2018-19 Mechanical Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19 Automotive Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19 Mechanical Engineering (Nuclear) - Not Running BEng (Hons) 2017-18 Mechanical Engineering [Sep][PT][UCW][3yrs] FdSc 2018-19 Mechanical Engineering [Sep][FT][BTC][2yrs] FdSc 2018-19 Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Mechanical Engineering [Sep][FT][Frenchay][3yrs] BEng 2018-19 Mechanical Engineering [Sep][SW][Frenchay][4yrs] BEng 2018-19 Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Automotive Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19 Automotive Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Mechanical Engineering with Manufacturing [Sep][PT][Frenchay][4yrs] BEng (Hons) 2018-19 Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][PT][UCW][4yrs] BEng (Hons) 2018-19 Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][PT][COBC][4yrs] BEng (Hons) 2018-19 Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19		
Module type:	Standard		
Pre-requisites	None		

Excluded Combinations	None
Co- requisites	None
Module Entry requirements	None

Part 2: Description

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

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

Part 3: Assessment			
Component A: Assessed via end of semester Exam (75%), which is a summative assessment. Formative assessment (not contributing to module mark) is provided via support in tutorial sessions. End of semester exam is two hours. Component B: Short Laboratory Report prepared during the scheduled session (25%). Formative assessment (not contributing to module mark) is provided via support in tutorial sessions.			
First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Laboratory Report - Component B		25 %	Laboratory report
Examination - Component A	✓	75 %	Examination (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Laboratory Report - Component B		25 %	Laboratory report
Examination - Component A	✓	75 %	Examination

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

	Module 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

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	112

	Total Independent Study Hours:	112
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	38
	Total Scheduled Learning and Teaching Hours:	38
	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/ufmfg3-15-1.html	