



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Fluid Dynamics		
Module Code	UFMFG3-15-1	Level	Level 4
For implementation from	2019-20		
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		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> 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.</p> <p><b>Outline Syllabus:</b> Introduction to fluid dynamics, pressure, density, hydrostatic pressure</p> <p>Volumetric and mass flow rates, continuity and Bernoulli's equation</p> <p>Flow measurement devices and calculations</p> <p>Dimensional analysis for engineering problems</p> <p>Flow types: laminar and turbulent flow, characteristics</p> <p>Solving laminar flow problems</p> <p>Solving turbulent flow problems</p> <p>Minor losses in pipe networks</p>

## STUDENT AND ACADEMIC SERVICES

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

STUDENT AND ACADEMIC SERVICES

<b>Part 4: Teaching and Learning Methods</b>																	
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Show a detailed knowledge and understanding of key principles in fluid dynamics analysis</td> <td>MO1</td> </tr> <tr> <td>Demonstrate an understanding and knowledge of modelling and solving numerical problems in fluid dynamics, based on knowledge of the relevant engineering principles</td> <td>MO2</td> </tr> <tr> <td>Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of fluid dynamics engineering problems</td> <td>MO3</td> </tr> <tr> <td>Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis</td> <td>MO4</td> </tr> <tr> <td>Demonstrate key transferable skills in problem formulation and decision making, interpreting experimental results</td> <td>MO5</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>	<b>Reference</b>	Show a detailed knowledge and understanding of key principles in fluid dynamics analysis	MO1	Demonstrate an understanding and knowledge of modelling and solving numerical problems in fluid dynamics, based on knowledge of the relevant engineering principles	MO2	Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of fluid dynamics engineering problems	MO3	Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis	MO4	Demonstrate key transferable skills in problem formulation and decision making, interpreting experimental results	MO5				
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ufmfg3-15-1.html">https://uwe.rl.talis.com/modules/ufmfg3-15-1.html</a></p>																

## STUDENT AND ACADEMIC SERVICES

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Mechanical Engineering and Vehicle Technology [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19  
Mechanical Engineering {Apprenticeship} [Sep][PT][Frenchay][6yrs] BEng 2018-19  
Mechanical Engineering [Sep][PT][COBC][6yrs] BEng 2018-19  
Mechanical Engineering and Vehicle Technology [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19  
Mechanical Engineering [Sep][PT][BTC][3yrs] FdSc 2018-19  
Automotive Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19  
Automotive Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19  
Automotive Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19  
Automotive Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19  
Mechanical Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19  
Mechanical Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng 2018-19  
Mechanical Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng 2018-19  
Mechanical Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19  
Mechanical Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19  
Mechanical Engineering [Sep][PT][Frenchay][6yrs] BEng 2018-19