MODULE SPECIFICATION

Part 1: Information			
Module Title	Thermofluidic Dynamics		
Module Code	UFMFTP-30-1	Level	Level 4
For implementation from	2018-19		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Contributes towards	Mechanical Engineering with Nuclear {Apprenticeship} [Sep][PT][BTC][4yrs] BEng (Hons) 2018-19 Electromechanical Engineering (Nuclear){Apprenticeship}(Sep][PT][BTC][3yrs] FdSc 2018-19 Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship} [Sep][FT][BTC][4yrs] 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: In this module learners will develop their mathematical analysis, practical and professional skills. It will cover fundamental concepts of thermal fluid dynamics and steam power generating plant.

Outline Syllabus: Thermofluidic Dynamics investigates the ideal gas laws and energy that is related to the flow of fluids and looks at the mathematical model of both. It analyses fluid networks to be able to identify the causes and remedies of pressure losses. The module also evaluates fluid machines and two phase flow.

Topic covered in this module:

Thermodynamics:

Fundamentals
Conservation of Energy and Mass
Thermodynamic Laws
Fluid Networks
Flow Measurement
Sheer Stress & Rate
Laminar and Turbulent Flow
Pressure Losses
Fluid Machines

Flow:

Void Fractions
Steam Quality
Flow Patterns
Pressure Losses

In this module the following mathematical concepts will be introduced and developed:

Dimensions and Physical Quantities
Differentiation
Integration
Numerical Methods
Using Matlab
Programming Structures

Teaching and Learning Methods: See Assessment and Outline Syllabus

Part 3: Assessment

Component A – Multiple Choice Exam – 90 minutes – This exam will assess the learners' understanding of core concepts of Fluid and Thermodynamics. It will also assess the learners' mathematical analysis skills of fluid and thermodynamics calculations.

Component B – Reflective Review – This portfolio will assess learners' ability to explain the causes of and solutions to pressure losses in a system. Learners must also analyse the different fluid machines and flow. The students must capture workshop based evidence and then provide a reflective review of the evidence to justify proposals for improvement to in-service thermofluidic systems.

The resit assessment tasks for this module will involve a rework and reflective evaluation of the work carried out in the original task.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		75 %	Reflective review
Examination - Component A	✓	25 %	Multiple Choice (90 minutes)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		75 %	Reflective review
Examination - Component A	✓	25 %	Multiple Choice (90 minutes)

Part 4: Teaching and Learning Methods

Learning Outcomes

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

	Module Learning Outcomes
MO1	Conduct flow energy and ideal gas system calculations
MO2	Explain the causes and remedies of pressure losses in fluid networks.
MO3	Analyse the use of fluid machines in flow networks.
MO4	Propose and justify improvements to in-service thermofluidic systems.

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	228
Total Independent Study Hours:	228
Scheduled Learning and Teaching Hours:	
Face-to-face learning	72
Total Scheduled Learning and Teaching Hours:	72
Hours to be allocated	300
Allocated Hours	300

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/index.html