



MODULE SPECIFICATION

Part 1: Information			
Module Title	Sensors, Transducers and Actuators		
Module Code	UFMFPK-15-2	Level	Level 5
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	Practical Electronics 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Educational Aims: This module is designed to introduce students to the basic working principles of electronic and electrical sensing, measuring and actuating devices with the aim of creating a sound fundamental knowledge of designing and operating engineering systems.</p> <p>In addition to the Learning Outcomes, the educational experience may develop through practice but not formally discretely assess self-management skills and working with others.</p> <p>Outline Syllabus: The syllabus outline includes:</p> <p>Sensors: working principles, characteristics, and types covering variety of applications such as motion, height, weight, volume, pressure, temperature, humidity, speed, angle, vibrations and flow rate. Interfacing, signal conditioning, display and recording.</p> <p>Transducers: working principles and types, choice of transducers in controlling processes, behaviour and performance studies of transducers.</p> <p>Actuators: types of actuators (includes all electrical actuation, pneumatic, rotatory), working principles, characteristics torque, speed, control, designing and modelling actuators and their derive systems.</p>

STUDENT AND ACADEMIC SERVICES

Teaching and Learning Methods: The students will learn to model and analyse the performance of real-world engineering systems using a series of lectures, tutorials and simulation based laboratory work. The module also involves studying relevant literature on environmental and sustainability limits, ethical, health, safety, security and risk issues, and code of practice and standards issues.

In addition to 36 hours of scheduled contact, students will be expected to spend (typically) 72 hours in independent study, preparation for classes, assimilation of knowledge and skills development. The assessment strategy involving submitting a research based assignment and end of module examination will require (typically) 22 hours.

Part 3: Assessment

The assessment consists of an end of module examination and group coursework assignment.

The strategy has been chosen to ensure that the engineering principles are assessed under controlled conditions, while a more open ended research based assignment is used to encourage wider engagement and reflection on this topic. There will be a controlled conditions written exam for component A and a coursework group assignment submission for component B.

The group coursework assignment submission will be based on an investigation of recent research on one of the main topics (i.e., Sensors, Transducers and Actuators) and how these concepts and devices are used in designing engineering systems and applications. The output of this investigation will be a 15 page group report with an integrated individual member's contribution.

First Sit Components	Final Assessment	Element weighting	Description
Group work - Component B		50 %	Group report
Examination - Component A	✓	50 %	Examination (2 hours)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		50 %	Individual report
Examination - Component A	✓	50 %	Exam (2 Hours)

STUDENT AND ACADEMIC SERVICES

Part 4: Teaching and Learning Methods																	
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;">Module Learning Outcomes</th> <th style="text-align: left;">Reference</th> </tr> </thead> <tbody> <tr> <td>Apply concepts and working principles of sensors transducers and actuators used in advance engineering processes [SM1p]</td> <td>MO1</td> </tr> <tr> <td>Apply engineering and scientific principles of other disciplines to support real-world implementation of sensors and actuators [SM3p]</td> <td>MO2</td> </tr> <tr> <td>Identify, classify and describe the performance of systems containing transducers and actuators through the use of analytical and modelling techniques [EA2p]</td> <td>MO3</td> </tr> <tr> <td>Investigate and design engineering application with sensors and actuators by identifying constraints including environmental and sustainability limits, ethical, health, safety, security and risk issues, and code of practice and standards [D2p]</td> <td>MO4</td> </tr> <tr> <td>Identify the commercial and economic and social context of engineering applications that integrate sensors and transducers [ET2p]</td> <td>MO5</td> </tr> <tr> <td>Apply quality standards to the design of systems containing sensors and transducers [EP7p].</td> <td>MO6</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Apply concepts and working principles of sensors transducers and actuators used in advance engineering processes [SM1p]	MO1	Apply engineering and scientific principles of other disciplines to support real-world implementation of sensors and actuators [SM3p]	MO2	Identify, classify and describe the performance of systems containing transducers and actuators through the use of analytical and modelling techniques [EA2p]	MO3	Investigate and design engineering application with sensors and actuators by identifying constraints including environmental and sustainability limits, ethical, health, safety, security and risk issues, and code of practice and standards [D2p]	MO4	Identify the commercial and economic and social context of engineering applications that integrate sensors and transducers [ET2p]	MO5	Apply quality standards to the design of systems containing sensors and transducers [EP7p].	MO6		
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p>https://uwe.rl.talis.com/modules/ufmfpk-15-2.html</p>																

Part 5: Contributes Towards	
<p>This module contributes towards the following programmes of study:</p> <p>Electronic Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19</p> <p>Electronic Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19</p> <p>Electronic Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19</p> <p>Electronic Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19</p>	