



MODULE SPECIFICATION

Part 1: Information			
Module Title	Principles of Electrical Engineering		
Module Code	UFMFJT-30-1	Level	Level 4
For implementation from	2020-21		
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		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: This module delivers material on basic principles of electrical and electronic (EE) engineering. In order to develop an electronic engineering background, the module introduces the concepts and the scope of the principles.</p> <p>The module develops mathematical concepts necessary to apply electrical principles to practical scenarios encountered in the laboratory.</p> <p>The module ensures that theory and practice are integrated and experiments provide students with confidence in analysing and designing simple electrical and electronic circuits.</p> <p>The module culminates in a project encompassing topics taught in the module.</p> <p>Educational Aims: The aim of this module is to embed electrical and electronic principles considered essential to the practice of electronic engineering at the start of the curriculum.</p> <p>Outline Syllabus: A list of typical content coverage is given below:</p> <p>Voltage and Current, AC, DC, Peak and RMS Values, forms of representation Resistance, Conductors, Semiconductors, Insulators Circuit laws and network theorems</p>

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Resistors, Capacitors and Inductors
 Active Devices, basic operation of Diodes, BJTs, FETs, and OPamps
 Digital Principles, Basic Boolean Algebra, Basic gates, Truth tables, basic logic gate circuit analysis
 Principles of Magnetism and Electromagnetic Theory
 Basic Concepts of Electromagnetic Propagation and Antennas
 Basic Concepts of Communication Engineering and Networks
 Basic concepts of Transducers
 Basic Understanding of Open-Loop and Closed-Loop Controllers and Systems
 Simple Analysis of Linear Systems using Time and Frequency Domain
 Basic Concepts of Electrical Machines and Supply Systems
 Basic A/D and D/A Conversion

Teaching and Learning Methods: In order to develop the underpinning knowledge for electrical and electronic engineering, the module introduces the concepts and the scope of the principles through lectures. These will be supported by directed reading, tutorial exercises, practical and simulation laboratory-based works.

Part 3: Assessment

In this module we are developing the theory and practice that underpin Electronic Engineering and are providing practical experiences that allow students to bring theory and practice together. The laboratory reinforces the material learned in the lecture sessions.

Component B The students will be required to submit an individual reflective portfolio of key concepts covered during laboratory sessions. The aim is to promote practices of keeping experimental notes and records of practical work and to encourage regular engagement in laboratory sessions.

There will be opportunity for students to gain feedback through planned review sessions interspersed through the laboratory classes. This strategy provides a mechanism for feedback and feed forward and is intended to assist students to develop confidence in the field and improve their work as they progress through the module.

Component A: will be an examination at the end of Semester 2 that is summative and assesses the student's knowledge and understanding of concepts and techniques learned throughout the module, and their ability to apply them to problems in electronics.

Resit Strategy:

Component B The students will be required to individually submit a reflective portfolio of a given set of key experiments.

Component A will be a written examination.

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	50 %	Exam (2 hours)
Portfolio - Component B		50 %	Individual portfolio of written up laboratory exercises.
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	50 %	Written examination (2 hours)
Portfolio - Component B		50 %	Individual portfolio of written up laboratory exercises.

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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>Clearly describe and explain basic principles of electrical engineering.</td> <td>MO1</td> </tr> <tr> <td>Analyse and interpret, using a variety of techniques, the characteristic behaviour of simple electric, magnetic and electronic circuits.</td> <td>MO2</td> </tr> <tr> <td>Design and implement circuits on breadboard, PCB and simulation software</td> <td>MO3</td> </tr> <tr> <td>Record clear, concise and accurate experimental notes.</td> <td>MO4</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Clearly describe and explain basic principles of electrical engineering.	MO1	Analyse and interpret, using a variety of techniques, the characteristic behaviour of simple electric, magnetic and electronic circuits.	MO2	Design and implement circuits on breadboard, PCB and simulation software	MO3	Record clear, concise and accurate experimental notes.	MO4								
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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://rl.talis.com/3/uwe/lists/C8E6076F-D772-A649-3A1E-FA3D38F7FCE9.html?lang=en-GB&login=1</p>																		

Part 5: Contributes Towards
This module contributes towards the following programmes of study: