

Module Specification

Module Summary Information

1	Module Title	Analogue and Digital Electronics
2	Module Credits	20
3	Module Level	5
4	Module Code	ENG5092

5	Module Overview
<p>This module introduces you to the fundamentals of analogue and digital electronics using a circuit approach.</p> <p>It has been designed to give you a usable level of electronics theory to demonstrate key concepts.</p>	

6	Indicative Content
<p>Digital Circuit Design: Combinational and Sequential logic design Combinational, asynchronous and synchronous design; sequential and non-sequential counters; sequence detectors. Specification and modelling: Mealy and Moore models, finite state machines (FSMs); algorithmic state machine (ASM) notation and use in the specification and design of sequential circuits.</p> <p>Analogue Circuit Design: Amplifier Circuits: Amplification: amplifier's gain and frequency response. Design and analytical analysis of single and multi-stage amplifiers. Small signal amplifier configurations, Output Circuits, Buffer circuits, Darlington pair. Op-Amp Modelling of non-ideal properties. Difference amplifier, Comparators. Difference Filter Design: Passive Filters; Specification of filters, and implementation using operational amplifiers. Design of Sallen-Key, multiple feedback filters.</p>	

7	Module Learning Outcomes
On successful completion of the module, students will be able to:	
	1 Evaluate the operation of components and subsystems as applied to the amplification and processing of analogue signals.
	2 Explain the basic concepts underlying the design and operation of electrical filter circuits.
	3 Analyse and design combinational and sequential logic circuits using standard gates and flip-flops.
	4 Recognise, interpret and differentiate between Mealy and Moore finite state machines.

8 Module Assessment				
Learning Outcome		Coursework	Exam	In-Person
1,2,3,4		X	X	

9 Breakdown Learning and Teaching Activities	
Learning Activities	Hours
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	48
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	0
Private Study (PS) includes preparation for exams	152
Total Study Hours:	200