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MODULE DESCRIPTOR

Module Title

Electronics 2

Reference	EN2510	Version	6
Created	June 2022	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	June 2022	ECTS Points	7.5

Aims of Module

To provide the student with the knowledge and skills to enable analysis, synthesis and design of basic standard circuit configurations of analogue and digital circuits, and the use of hardware description languages.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Analyse and design standard digital circuits.
2	Analyse and design standard analogue circuits.
3	Design and simulate standard digital circuits.
4	Design and simulate standard analogue circuits.

Indicative Module Content

Data conversion, Introduction to ADC and DAC circuits. Identification, analysis and elimination of circuit hazards. MSI circuits, including encoders, decoders, multiplexers, demultiplexers, applications. Sequential circuits, flip-flop types, characteristic equations, synchronous counters, shift registers; flow diagram representation of digital systems. Introduction to basic concepts and use of, Algorithmic State Machines; applications in sequential circuits. Introduction to programmable devices. Introduction to VHDL coding of digital systems. Simple transistor (low-frequency) model. Analysis and synthesis of feedback circuits, two-transistor feedback amplifiers. Non-ideal operational amplifier, typical operational amplifier circuit configurations and applications, eg amplifiers, filters, oscillators.

Module Delivery

This is a lecture based course supplemented with tutorial sessions, laboratory exercises and student centred learning.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	48	48
Non-Contact Hours	102	102
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	3, 4
Description:	Laboratory investigation.				

Component 2

Type:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 is worth 30% and C2 is worth 70%.

Examination:

	Coursework: A	B	C	D	E	F	NS
A	A	A	B	B	E	E	
B	B	B	B	C	E	E	
C	B	C	C	C	E	E	
D	C	C	D	D	E	E	
E	E	E	E	E	E	F	
F	F	F	F	F	F	F	

NS Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	EN1512 Introduction to Analogue Electronics and Signals or equivalent and EN1541 Introduction to Digital Electronics and Engineering Programming or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1. BEARDS, P., 2002. Analog and Digital Electronics: A First Course. 2nd ed. Upper Saddle River, NJ: Prentice Hall.
2. FLOYD, T., 2015. Digital Fundamentals. 11th ed. Upper Saddle River, NJ: Prentice Hall.
3. KATZ, R. and BORRIELLO, G., 2005. Contemporary Logic Design. 2nd ed. Upper Saddle River, NJ: Prentice Hall.
4. ROTH, C.H., 2013. Fundamentals of Logic Design. 7th ed. Boston, MA: Thomson Brooks/Cole.