Module Title:	Analogue and Digital Electronics 2
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	3 programme(s)

Teaching & Learning Strategies:	(a) This will take the form of problem-based learning during tutorials and practical classes. (b) An emphasis will be placed on relating individual circuits to useful application systems both in theory and practical classes. (c) Circuit simulation software may be used in the problem-solving sessions to validate student solutions. (d) Particular emphasis will be placed on active learning including problem/project based learning

Module Aim:	To give the students the knowledge, competencies and skills to analyse commonly used analogue and digital systems

Learning Outcomes
On successful completion of this module the learner should be able to:

LO1	Explain the operation of common electronic circuits using operational amplifiers such as comparators and oscillators using operational amplifiers
LO2	Analyse the operation of linear power supplies
LO3	Describe battery operation, construction, shelf live and safe disposal.
LO4	Design and implement significant combinatorial digital circuits using conventional gates and logic components.
LO5	Explain the operation of a microprocessor-based system including operation of bus, memory and input/output.
LO6	Demonstrate the ability to work effectively in a group, undertaking personal, administrative and organisational activities associated with an efficient team.

Pre-requisite learning
Module Recommendations
This is prior learning (or a practical skill) that is recommended before enrolment in this module.
No recommendations listed
Incompatible Modules
These are modules which have learning outcomes that are too similar to the learning outcomes of this module.
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements
This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.
No requirements listed

Module Content & Assessment

Indicative Content
Sequential logic design Sequential logic - counters, state machines etc
Assembly code Introduction to assembly code instructions.
Embedded C Introduction to Embedded C for microcontrollers.
Microprocessors Microprocessor architecture
Memory Addressing Memory Addressing
Operational Amplifiers Explain the operation of several basic comparator circuits. - Describe the topology and applications of integrator and differentiator circuits. - Describe and analyse the operation of a summing amplifier. - Describe the topology and application of Schmitt trigger circuits.
Linear Power Supplies Describe line and load regulation. - Analyse the basic operation of both series and shunt voltage regulators. - Describe applications of IC voltage regulators. - Analyse the performance of a regulator using a commercial IC.
Batteries Describe battery operation and construction

Assessment Breakdown	%
Continuous Assessment	30.00%
Practical	20.00%
End of Module Formal Examination	50.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Class Test, Mini Projects	1,2,3,4,5,6	30.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Laboratory experiments, Problem Solving Exercises	1,2,3,4,5,6	20.00	n/a

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Formal End of Module Examination	1,2,3,4,5	50.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	Every Week	6.00
Laboratory	Every Week	4.00
Independent Learning Time	Every Week	3.00
	Total Hours	13.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	Bachelor of Engineering (Honours) in Biomedical Electronics	4	Mandatory
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	4	Mandatory
CW_EEBEE_D	Bachelor of Engineering in Biomedical Electronics	4	Mandatory

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	Bachelor of Engineering (Honours) in Biomedical Electronics	4	Mandatory
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	4	Mandatory