Module Title:	Analysis of Analogue Circuits
Language of Instruction:	English

Credits:	10

NFQ Level:	7

Module Delivered In	3 programme(s)

Teaching & Learning Strategies:	(a) This will take the form of problem-based learning during lectures 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.

Module Aim:	To give the students the specialised knowledge, technical competencies and conceptual skills to: (a) Evaluate the performance of a multi-stage voltage amplifier. (b) Analyse and use commercial data conversion and filter devices. (c) Describe and calculate the frequency responses of passive and active filters. (d) Analyse the operation of power electronic circuits.

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

LO1	Evaluate the performance of a multi-stage voltage amplifier.
LO2	Evaluate the performance of a power amplifier.
LO3	Analyse and use commercial data conversion and filter devices.
LO4	Analyse and design a special-purpose amplifier.
LO5	Analyse and design the response of passive and active filters.
LO6	Analyse the operation of power electronic circuits.

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.
Analogue Electronic Systems or equivalent, Mathematics 2 or equivalent

Module Content & Assessment

Indicative Content
(a) Multistage Amplifiers Capacitively and Direct-Coupled Amplifiers.
(b) Power Amplifiers Class A, B & AB Power Amplifiers.
(c) Data Conversion Circuits Sample & Hold Amplifiers; DAC Circuits; Integrating, Successive-Approximation & Flash ADCs.
(d) Special Purpose Amplifiers Instrumentation Amplifiers; OTA Ampifiers; Log and Antilog Amplifiers.
(e) Filters Response Characteristics; Active LP, HP, BP & BS filters; Active Filter Design; Commercial filter ICs.
(f) Power Electronics Power Control Circuits using SCRs & triacs.

Assessment Breakdown	%
Continuous Assessment	20.00%
Practical	20.00%
End of Module Formal Examination	60.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Students will sit a written examination during the module.	1,2,3,4	20.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Each student will complete a set of practical assignments together with brief reports during the module, for which a maximum total mark of 20% will be awarded. Each assignment will test the ability of the student to apply the course theory to a practical problem.	1,2,3,4,5	20.00	n/a

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A final written examination will test the student's ability to demonstrate the learning outcomes.	1,2,3,4,5,6	60.00	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	4.00
Practicals	Every Week	3.00
Independent Learning	Every Week	3.00
	Total Hours	10.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	Bachelor of Engineering (Honours) in Biomedical Electronics	5	Mandatory
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	5	Mandatory
CW_EEBEE_D	Bachelor of Engineering in Biomedical Electronics	5	Mandatory

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	Bachelor of Engineering (Honours) in Biomedical Electronics	5	Mandatory
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	5	Mandatory