

Module Title:	Analysis of Analogue Circuits
Language of Instruction:	English
Credits:	10
NFQ Level:	7
Module Delivered In	No Programmes
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.
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	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Evaluate the performance of a multi-stage voltage amplifier.
LO2	Analyse and use commercial data conversion and filter devices.
LO3	Analyse and design the response of passive and active filters.
LO4	Analyse the operation of power electronic circuits.
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
Analogue Electronic Systems or equivalent	

Module Content & Assessment

Indicative Content

(a) Multistage and Power Amplifiers

Capacitively, Direct and Transformer-Coupled Amplifiers; Class A, B & AB Power Amplifiers; Commercial IC Power Amplifiers.

(b) Data Conversion Circuits

Sample & Hold Amplifiers; DAC Circuits; VFC and FVC Converters; Integrating, Successive-Approximation & Flash ADCs.

(c) Special Purpose Amplifiers

Instrumentation Amplifiers; OTAs and Isolation Amplifiers; Log and Antilog Amplifiers.

(d) Filters

Response Characteristics; Active LP, HP, BP & BS filters; Active Filter Design; Commercial filter ICs.

(e) Power Electronics

Power Control Circuits using SCRs & triacs; Diac-Based Triggering Circuits.

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 series of written examinations during the module.	1,2,3	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.	1,3	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	60.00	End-of-Semester

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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	2.00
Tutorial	Every Week	1.00
Practicals	Every Week	2.00
Independent Learning	Every Week	2.00
Total Hours		7.00

