SYST C4603: Signals and Systems 2

Module Title:	Signals and Systems 2
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures and Laboratory Practicals using software simulation tools

Module Aim:	To introduce the students to the mathematical methods and tools to analyse signals and systems in the time and frequency domains with application to engineering problems

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Describe an engineering system in mathematical terms.
LO2	Analyse the system and predict its performance
LO3	Simulate the system using appropriate mathematical techniques
LO4	Analyse a system and predict its performance
LO5	Examine a system in terms of stability

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

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Module Content & Assessment

Indicative Content
Linear Time-Invariant Systems Impulse Representation of Signals; Convolution; Properties of LTI Systems; Causality; Stability; Difference Equations- Block Diagrams
Fourier Analysis Fourier series applied to Periodic Signals; The Fourier Transform; The Discrete Fourier Transform; Applications
The Laplace Transform Pole-zero plots, Applications of the Laplace Transform; Region of convergence; The Inverse transform
The z-Transform Region of convergence; The inverse z-Transform; Geometric evaluation of the z-Transform; Properties of the z-Transform; Transformations between continuous-time and discrete-time systems
Filtering Ideal filters; Non-ideal filters; Continuous-Time filter; Design techniques; Discrete-Time filter; Design techniques

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*
Short Answer Questions	Class tests	1,3,4,5	20.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	A program of experiments will be carried out based on material covered on the course.. Assignments will be given to the students on aspects of signal processing during the module.	1,3,4,5	20.00	n/a

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Formal Exam at the end of the Semester	1,2,3,4,5	60.00	End-of-Semester

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

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	Every Week	3.00
Laboratory	Every Week	2.00
Independent Learning Time	Every Week	2.00
	Total Hours	7.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	Bachelor of Engineering (Honours) in Biomedical Electronics	8	Mandatory
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	8	Mandatory