Liverpool John Moores University

Title:	SIGNALS AND SYSTEMS
Status:	Definitive
Code:	**4506ICBTEL** (127017)
Version Start Date:	01-08-2021
Owning School/Faculty:	Engineering
Teaching School/Faculty:	ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level:	FHEQ4	**Credit Value:**	15	**Total Delivered Hours:**	62
Total Learning Hours:	150	**Private Study:**	88		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	45
Practical	9
Tutorial	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Coursework (1500 words)	30	
Exam	AS2	Exam	70	2

Aims

This module will introduce the student to basics of Signals and Systems. In addition, student will be exposed to linear time-invariant systems and software packages such as Matlab to simulate signals in various conditions.

Learning Outcomes

After completing the module the student should be able to:

1	Demonstrate the basic knowledge of understanding continuous time and discrete time signals, plotting and applications.
2	Demonstrate the basic knowledge of continuous time physical system mathematical modelling and find transfer functions.
3	Solve problems related to time domain, frequency domain, plot CT/DT signals, DT convolution, Laplace transforms to understand the basic concepts of signals and systems.
4	Apply Matlab or Simulink tools for analyze and simulate real signals or systems.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Coursework	1	4
Exam	2	3

Outline Syllabus

1. Introduction to CT and DT signals and systems. Discus real examples available in nature and manmade.
2. Mathematical physical modelling of CT systems
3. Laplace transformation and inverse Laplace transformation.
4. First order and second order CT transfer function for physical systems.
5. CT time response
6. CT convolution
7. DT signal and system representation and plotting.
8. DT system blocks and DT transfer function.
9. Introduction to Z- transform
10. Classification of DT systems
11. DT-Impulse response
12. Fourier series
13. Fourier transform
14. Matlab for signals or systems.

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:

Signals and system theory acquired through lectures, seminars, tutorials and in class group work.

Mathematical models design and analysis by using simulation by appropriate learning software in computer laboratory classes.

Notes

This content appears to be Signal & System both. Finally, student will be able to model, simulate and apply signal and systems in real engineering scenarios.