LIVERPOOL JOHN MOORES UNIVERSITY

Advanced Signal Processing

Module Information

2022.01, Approved

Summary Information

Module Code	7550WCSST
Formal Module Title	Advanced Signal Processing
Owning School	Engineering
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Sri Lanka Technological Campus

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	11
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	12 Weeks

Aims and Outcomes

Aims	This module aims to develop an advanced understanding of techniques and practical experience in applications of digital signal processing (DSP).

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Analyse advanced concepts and analytical tools for DSP systems
MLO2	2	Design and implement a range of complex digital filters
MLO3	3	Apply high level techniques for a stochastic signal
MLO4	4	Use DSP to implement a range of complex engineering applications

Module Content

Outline Syllabus	Digital Signal Processing (DSP) and Systems – Fundamentals, Architectures andCharacteristicsAnalysis Tools and Transforms – Fourier: Continuous Time Fourier Transform(CTFT), Discrete Time Fourier Transform (DTFT), Discrete Fourier Transform (DFT), Fast Fourier Transform (FFT); Laplace and Z-transformsDigital Filters: Design and Implementation – Finite Impulse Response (FIR), Infinite Impulse Response (IIR), Analogue Prototypes & AlgorithmsA/D and D/A Conversions – Quantization, Sample and Hold, Antialiasing, Acquisition Speech Processing – Linear predictive coding (LPC), Synthesis, Coding and RecognitionDSP Hardware ArchitectureEfficient Implementation of DSP algorithms on HardwareStochastic signal processing, Random Processes, Spectrum, Power Spectral Density (PSD), white noise
Module Overview	
Additional Information	This module aims to develop an advanced understanding of techniques and practical experience in industry-oriented applications of digital signal processing.United Nations Sustainable Development Goals:3. Good Health and Wellbeing7. Affordable and Clean Energy9. Industry, Innovation and Infrastructure11. Sustainable Cities and Communities12. Responsible Consumption and Production

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Exam	Examination	70	2	MLO1, MLO3, MLO4
Report	Case study	30	0	MLO2, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Gerard Edwards	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings