Digital Audio Applications

Module Information

2022.01, Approved

Summary Information

Module Code	5531STE
Formal Module Title	Digital Audio Applications
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Liverpool Institute for Performing Arts

Learning Methods

Learning Method Type	Hours
Lecture	20
Workshop	30

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	28 Weeks

Aims and Outcomes

Aims	To provide students with a clear understanding of the essential theory associated with digital audio systems and their implementation To apply digital signal processing theory in the development of practical audio tools.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Apply digital signal processing theory in the design of practical audio tools
MLO2	2	Explain the underlying theory and practice associated with digital audio conversion and transmission
MLO3	3	Evaluate a range of techniques employed in data compression for audio

Module Content

Outline Syllabus	Digital Audio Signal Path A/D converter topologies – advantages and disadvantages of individual approaches. Clock function and distribution; dithering function and options; compatibility issues; digital audio transmission standards – AES/EBU, SP-DIF, T-DIF, MADI; metering considerations. Quality considerations in digital systems – jitter, PLL stability Digital Audio Networking Networking basics; OSI model; switching and routing; Layer1,2 and 3 approaches and standards,; circuit switched vs packet switched approaches Digital Signal Processing Digital filter implementation. Convolution. Reaktor software as an audio processing development tool. Design of digital audio processing tools in Reaktor – EQ, dynamics, surround panning. Data Compression Information theory and notions of redundancy; lossless compression – Huffmann, LZW; lossy compression precepts; architecture and operation of MPEG 1, MPEG2 and AAC audio codecs; compression artefacts and what to listen for; objectively evaluating codec performance
Module Overview	
Additional Information	Jon Thornton is the Module Leader

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Essay	Demonstration	50	0	MLO1, MLO2
Exam	Written Exam	50	1.5	MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings

Partner Module Team

Contact Name	Applies to all offerings	Offerings