Liverpool John Moores University

Title:	Audio Restoration and Digital Enhancement Techniques
Status:	Definitive
Code:	**6006AMP** (120147)
Version Start Date:	01-08-2019
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Colin Robinson	Y

Academic Level:	FHEQ6	**Credit Value:**	24	**Total Delivered Hours:**	72
Total Learning Hours:	240	**Private Study:**	168		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	48

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Analyse, restore and reconstruction/transfer of archive audio material to a modern format	40	
Practice	AS2	Identify isolate and enhance of audio components	30	
Report	AS3	Report on methodologies employed for improving development of an engineered product	30	

Aims

To train students in the application of modern digital techniques for the analysis

reconstruction/transfer /identification and enhancement of a variety of audio signals and artefacts.

Learning Outcomes

After completing the module the student should be able to:

1	Demonstrate the appropriate selection of tools to restore audio material from various formats
2	Analyse and reconstruct an audio product to appropriate industry standards
3	Analyse and enhance a sound file to identify information contained within
4	Apply knowledge and techniques to suggest/develop improvements for an engineered product

Learning Outcomes of Assessments

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

Reconstruct/transfer audio mat	1	2
Isolate/enhance audio comps	2	3
Report on methodologies	4	

Outline Syllabus

Audio recording and acoustic analysis in historical context
Signal Analysis and Fourier Transform
Digital Archiving of materials
The audio chain and optimisation
Identification of Format Capabilities and Limitations
Format transfer techniques
Comparisons of Modern and Historical Recording and Reproduction formats
Application of Digital standards & formats, sample rates and quality
Noise analysis and reduction systems
Spectral analysis and acoustic enhancement
Waveform analysis and reconstruction
Application of acoustic analysis to enhance environment , reproduction and products
Modern noise suppression techniques
Audio restoration and reconstruction processes
Assessment, management and reporting of audio analysis
Analysis of live-captured and electronically-generated content
Maintenance of levels to relevant technical acceptance standards
Application of Audio restoration processes in Industry

Learning Activities

Practical sessions and demonstrations including student work groups

Notes

This module is designed to give students an opportunity to apply their audio skills to broader less traditional industry applications and as an introduction to the application of the disciplines taught throughout their degree to the new opportunities available in the fast growing industries of Audio Archiving, Audio Restoration and Bespoke Sound design for Industrial Applications.