

## Liverpool John Moores University

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Title: Advanced Audio Forensics  
Status: Definitive  
Code: **7115AMP** (129233)  
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering  
Teaching School/Faculty: Engineering

Team	Leader
Colin Robinson	Y
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**Academic Level:** FHEQ7      **Credit Value:** 20      **Total Delivered Hours:** 50  
**Total Learning Hours:** 200      **Private Study:** 150

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	20
Practical	25
Tutorial	5

**Grading Basis:** 50 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Audio equipment identification, setup and calibration	30	
Report	AS2	Advanced forensic audio evidence handling tools. Investigation procedures. Processing evidence presentation	70	

### Aims

*To provide students with the theory, processes and techniques in the emerging field of Audio Forensics*

*To equip the student with knowledge and understanding to critically analyse, select and apply appropriate techniques to transcode, authenticate, enhance, interpret and report on forensic media investigations*

*To foster an environment that encourages self-reliance, professionalism and promotes continuous learning self-development and a culture that addresses the potential impact of various forms of bias can have on the interpretation of results within the evidence chain*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Recognise, specify, setup and calibrate common audio capture and interrogation equipment
- 2 Critically appraise audio materials obtained from a variety of common digital and analogue sources
- 3 Use advanced techniques to investigate, process, interpret and reconstruct forensic audio materials using a variety of tools to recognised standards
- 4 Explain and report the procedures completed in a professional and accessible manner

## **Learning Outcomes of Assessments**

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

Practical	1	2		
Report	1	2	3	4

## **Outline Syllabus**

*Advanced measurement scales tools and techniques*  
*Advanced audio visualisation tools charts and techniques*  
*Strategies and limitations of surveillance techniques*  
*Advanced spectrographic audio analysis and interpretation*  
*Forensic application of digital audio processing*  
*Advanced forensic audio tools and procedures*  
*Emerging digital audio technologies*  
*Binaural trilateration and doppler calculations*  
*Fast Fourier Transforms*  
*Recognizing audio forgery using advanced critical listening procedures*  
*Implications of frequency masking*  
*HEX and EXIF interrogation of audio*  
*Over processing implications*  
*Analogue audio systems and transfer techniques*  
*Analogue transcoding*

*Preparation of documentation for such cases  
Forensic audio reporting and evidence for cross examination*

## **Learning Activities**

Lectures, practical sessions and demonstrations

## **Notes**

This module will provide students with a thorough understanding of the advanced practical theory, skills, processes and procedures pertinent to their current /potential role as Audio Forensic Specialist. The focus will be on many common real-life situations although there may be scope to further specialise in specific areas of the field.

The Syllabus involves applying the Audio Forensic process chain appropriately with a keen awareness of the risks and implications associated with the standards and processes required for each procedure:

1. Capture/ Duplication/Handling of files from original format in professional manner
2. Transfer of authenticated files to digital analysis software
3. Manipulation and Interpretation of Audio files in Analysis Software for forensic investigation purposes
4. Documentation and Reporting completed to a level of competence where the student is able to defend materials in court