

## Liverpool John Moores University

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Title: Audio Forensics  
Status: Definitive  
Code: **7110AMP** (129229)  
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 1

Component	Contact Hours
Lecture	20
Practical	25
Tutorial	5

**Grading Basis:** 50 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	AS1	Fundamentals of audio signals (calculations scales and audio theory)	30	
Report	AS2	Audio evidence handling. Application of tools. Identification procedures. Processing. Evidence Preparation	70	

## **Aims**

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

*To equip the student with knowledge and understanding to critically analyse, select and apply appropriate techniques to prepare, transcode, manipulate, store and report upon audio materials to be used in forensic media investigations*

*To foster an environment that promotes self-reflection, peer review and a keen awareness of 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 Critically appraise Audio materials obtained from a variety of common sources
- 2 Transfer, store and manipulate audio materials for forensic purposes to recognised guidelines and standards
- 3 Analyse and process materials recognising the risks, implications and potential influence that the procedures they have undertaken may have on the outcomes of criminal investigations
- 4 Prepare documentation and reports to the appropriate standards

## **Learning Outcomes of Assessments**

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

Test	1	2		
Practical and report	1	2	3	4

## **Outline Syllabus**

*Introduction to Audio and Forensic Audio*

*Sound and Wave theory*

*The Ear and the way we hear*

*Hearing (Health and Safety, Limits Range and Protection)*

*Equipment Choice and Specification*

*Equipment connectivity, Cabling and Standards*

*Reverberation/Diffraction/Inverse Square Law*

*Measurement Scales tools and techniques*

*Digital Sampling and related Audio Theory*

*Audio Visualisation Tools charts and techniques*

*Audio Signal Chain theory*

*Critical Listening and Evaluation*

*Risks of Bias in Audio Forensic Procedures*

*Working to ISO Guidelines for Audio in Forensics*

*Modern Audio capture encoding and storage techniques*

*Limitations of Audio Capture equipment and common file formats*

*Digital Audio Coding and common compression techniques*  
*Common File identification and size calculations*  
*Benchmarking and Reference Equipment setup*  
*Audio Handling and Extraction Techniques*  
*Audio Processing techniques for identifying Authenticity*  
*Reporting and Preparation of documentation*

## **Learning Activities**

Lectures, tutorials, investigations, practical sessions and demonstrations

## **Notes**

This module will provide students with a thorough understanding of the relevant theory, skills, processes and procedures pertinent to their current /potential role as an Audio Technician and prepare them for a career as an 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 processing 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 files to digital editing and analysis software
3. Authentication Assessment of files
4. Manipulation and Preparation of Audio files in Audio Software for forensic investigation purposes
5. Safe storage and transfer techniques
6. Quality Assessment and Documentation for effectiveness, acceptability, impact accuracy and repeatability of the Audio processes completed to a level of competence where the student is able to prepare materials for submission in court