LIPA
THE LIVERPOOL INSTITUTE FOR PERFORMING ARTS

Module Specification

Summary Information

Module Code	4601STE
Formal Module Title	Technical Foundations – Acoustics and Audio
Career	Undergraduate
Credits	30
Academic level	FHEQ Level 4
Module Pass Mark	40

Learning Methods

Learning Method Type	Hours
Lecture	40
Workshop	40

Module Offering(s)

Start Month	Duration
September	28 Weeks

Aims and Outcomes

Aims	To introduce theoretical concepts that underpin much of the practical material delivered in other course modules. To provide some historical context for ideas and approaches that commonly apply to audio practice.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Demonstrate a theoretical understanding of the physical principles and metrics associated with basic acoustic, psychoacoustic, electronic, and audio systems.
MLO2	Perform calculations using the common mathematical quantities relevant to audio systems using both calculators and spreadsheet tools.
MLO3	Understand the basic design and operational principles of commonly used audio recording and processing devices.

MLO4	Demonstrate the methods and presentation of room acoustic calculations and audio measurement parameters.

Module Content

Outline Syllabus
Acoustic & Psychoacoustic Foundations - • Waves, Parameters, Quantities, Decibels • Human Hearing, Music Perception, Phase and Comb Filtering, • Reverberation, Metrics, Modes, Rooms, Studios, • Musical Acoustics, Pitch & Frequency, Harmonic Structure **Audio Signal & System Foundations -** • Analogue Signals, Digital Audio Theory (Sampling, ADC, Coding, DAC) • DC and AC Electricity, Basic Audio Circuits, Stereo & Metering, • Microphones, Loudspeakers, Tape & Disk Recording • Audio Measurement, Testing, Cable Building **Digital Effects Processing Foundations -** • Modular design software, Subtractive Synthesis, Additive Synthesis, Filters, Equalisation, Delay, Modulation, Basic Reverb
Module Overview
This module is delivered primarily through lecture and practical workshop delivery. The content is mostly theoretical and is intended to support understanding in many other areas of the programme, Concepts are introduced and explained in the lecture. The workshops are in various forms some using spreadsheet software to enable efficient calculations and graph plotting, some are more demonstration focussed in the recording studios / digital audio lab, and some are to teach cable building and connectors in a live sound workshop. Practical assessments are generally arranged in pairs and the exam to assess theoretical understanding is an individual assessment.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Exam	Exam	40	1.5	MLO1, MLO2
Practice	Acoustics Spreadsheet	30	0	MLO1, MLO2, MLO4
Practice	Audio Processor Design	30	0	MLO1, MLO2, MLO3