

Liverpool John Moores University

Title: Studio Design
Status: Definitive
Code: **6539STE** (124052)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Liverpool Institute for Performing Arts

Team	Leader
Karl Jones	

Academic Level: FHEQ6
Credit Value: 20
Total Delivered Hours: 30
Total Learning Hours: 200
Private Study: 170

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	16
Practical	10
Workshop	4

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Presentation	Pres	Acoustic Design Spreadsheet	40	
Report	Design	Studio Design Documentation	60	

Aims

This module is intended to provide an understanding of the important considerations in the acoustic design and improvement of recording studio spaces. Much of the work will involve mathematical calculations and equations essential for understanding the acoustics in a methodical manner.

Spreadsheet software will be introduced for the purpose of assisting the design

process and this forms a major part of the module.

Practical workshops relating to prediction, measurement and processing will also be a key part of the module.

The teaching structure will also include a visit to an acoustics research facility and a guest lecture by a studio design professional.

Learning Outcomes

After completing the module the student should be able to:

- 1 Apply specific technical procedures and standards relevant to the internal acoustic design and noise control of recording studio control room spaces
- 2 Design and use spreadsheet calculation and graphs to assist in the acoustic design and prediction of a listening space.
- 3 Design a recording studio control room working to a brief and present this in a technical document

Learning Outcomes of Assessments

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

Design Spreadsheet	1	2
Studio Design Documentation	2	3

Outline Syllabus

Basic Acoustics

Revision of sound waves; Wavelength, period, frequency; The decibel; Power, intensity and pressure; Adding coherent and incoherent sources; Diffraction, reflection and absorption; Comb filtering; Inverse square law; Psychoacoustics.

Noise Control and Isolation

Requirements for Noise Control; NR/NC Curves; Mass Law; Walls; Windows; Floating Floors; Anti-vibration mounts; Comparison of Materials; Air conditioning.

Small Room Acoustics

Reverberation; Comb filtering; Room modes; Low / mid / high frequency issues.

Absorption and Diffusion

Absorption coefficient ; Absorbers - Panel, Helmholtz, low frequency; Diffusion – QRD, Schroeder. Design of these.

Typical Studio Spaces

Performance Spaces; Control Rooms; Listening Rooms; Mastering Rooms;

Subjective requirements of different rooms; Conventions

Listening and Measurement

Practical demonstrations of acoustic issues; Measurement techniques; Modal behaviour.

Loudspeaker Considerations

Placement and control of loudspeakers in a small room.

Learning Activities

This module will be delivered using the following teaching and learning strategies:

Lectures to introduce key concepts and theories

Workshops to apply these concepts using spreadsheet modelling

Workshops to demonstrate practical use of test and measurement equipment

Site visits

Individual study in line with guidance and direction from tutors

Notes

Peter Philipson is the Module Leader (p.philipson@lipa.ac.uk)