

## Liverpool John Moores University

Title: Sound Reinforcement 2  
Status: Definitive  
Code: **5533STE** (124042)  
Version Start Date: 01-08-2021

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

Team	Leader
Karl Jones	

**Academic Level:** FHEQ5  
**Credit Value:** 20  
**Total Delivered Hours:** 44  
**Total Learning Hours:** 200  
**Private Study:** 156

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Practical	4
Workshop	20

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Portfolio	Portfolio of Technical Drawings	40	
Exam	Exam	Practical Project/Exam	60	

### Aims

*This module aims to build on and develop the skills and techniques learned in Sound Reinforcement 1. Whilst that module is based around small to medium sized portable sound reinforcement, and largely in a popular music context, this module addresses larger sound reinforcement systems in both fixed installations and portable situations. It also introduces the learner to the specific requirements of sound-reinforcement and sound design in theatrical and other non-musical contexts. More*

*advanced technologies are introduced, such as the use of RF systems for microphones and monitoring, active speaker management and measurement systems, advanced applications of live sound digital mixing consoles, introduction to digital audio networking and the use of sophisticated DSP based systems for processing and show control.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Design, rig, optimize and operate a medium to large sound reinforcement system appropriate to a given brief in a theatrical context and including both live elements and recorded cues
- 2 Demonstrate a detailed knowledge of the function and use of digital speaker management and measurement systems, RF mics, wired and wireless monitoring and communication systems
- 3 Identify, diagnose and resolve faults in complex sound reinforcement systems taking into account relevant safety requirements including power distribution
- 4 Apply the forms and conventions of theatrical sound design to process and product
- 5 Critically evaluate their process and product including both technical and non-technical influences

## **Learning Outcomes of Assessments**

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

Portfolio	1	4		
Practical Project	1	2	3	5

## **Outline Syllabus**

### *Advanced Speaker Systems*

*Multiple speaker arrays – distributed approaches to reinforcement; active speaker management systems – crossover points and responses, compression and protection; rigging and flying techniques for loudspeakers; time alignment and imaging*

### *Advanced System Design*

*Working with mix matrixes; analogue and digital live sound consoles; digital audio networking basics; DSP based system processing – advantages and disadvantages, key components, software building blocks, building DSP-based system processing profiles, remote monitoring; power distribution – single and multi-phase, distribution and conditioning units, avoiding earth loops*

### *RF Technology and Communications Systems*

*Basic principle of RF transmission and reception; aerial types and uses; frequency planning, management and licensing; inter-modulation and how to avoid it; RF distribution and head amplification; working with radio microphones – capsule types*

*and characteristics, mic placement strategies and techniques with head-worn microphones; working with In-Ear Monitoring Systems; Communication systems for live sound - design and implementation*

#### *Theatre Sound Design*

*Similarities and differences in theatrical reinforcement requirements; role of the sound designer; working from scripts; building an FX plot and sound cues, practical effects; integrating live music with theatre; roles and jobs in theatre; protocols for working in theatre; planning and producing documentation*

#### *System Measurement and Tuning*

*Principles of measurement – pink noise and spectrum analysis vs. TEF/MLSSA/dual FFT principles; using software and hardware tools for measurement, including an introduction to SMAART-Live.*

### **Learning Activities**

This module is delivered in both lecture and workshop formats. Lectures will be used to cover underlying theory and broad concepts, whilst workshop sessions will put this theory in to practice by working with the relevant sound reinforcement systems. Practical assessment will take place as an observed rig, test and performance in a group setting.

### **Notes**

Chris Layton is the Module Leader.