

<b>Module Code:</b>	CMT528
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<b>Module Title:</b>	Loudspeaker Operational Principles
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<b>Level:</b>	5	<b>Credit Value:</b>	20
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<b>Cost Centre(s):</b>	GACT	<u>JACS3</u> code:	J930
		<u>HECoS</u> code:	100222

<b>Faculty</b>	Arts, Science and Technology	<b>Module Leader:</b>	Colin Heron
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Scheduled learning and teaching hours	36 hrs
Guided independent study	164 hrs
Placement	0 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>Programme(s) in which to be offered (not including exit awards)</b>	Core	Option
BSc (Hons) Sound Technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BSc (Hons) Music Technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BSc (Hons) Professional Sound & Video	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BSc (Hons) Live Sound	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<b>Pre-requisites</b>
None

**Office use only**

Initial approval: 13/03/19

Version no:1

With effect from: 01/09/2019

Date and details of revision:

Version no:1

## Module Aims

This module is designed to give the student a thorough grounding in the technology and principles that define the performance of discrete loudspeaker components as applied to professional sound systems. The approach will be to consider each element of a system in turn and to investigate and evaluate its contribution to the system as a whole. The module will investigate this in the context of commercial system design, including concert systems as well as audio visual installation.

## Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

### At the end of this module, students will be able to

### Key Skills

At the end of this module, students will be able to		Key Skills	
1	Identify the key performance criteria for high performance transducers	KS1	KS3
		KS4	KS5
		KS9	KS10
2	Evaluate the quality and performance of a system with quantitative and qualitative methodologies	KS1	KS3
		KS5	KS6
		KS10	
3	Prepare detailed reports considering the effectiveness of system components in a given context	KS1	KS3
		KS6	KS9
		KS10	
4	Apply relevant research from sources such as the Audio Engineering Society to inform the formulation of a working solution	KS5	KS6
		KS10	

### Transferable skills and other attributes

Information Technology  
Test Methodologies  
Technical Analysis  
Research Skills

**Derogations**

*None*

**Assessment:**

## Indicative Assessment Tasks:

Assignment 1: The portfolio will be in the form of a weekly blog that will systematically investigate the given topics of the module on a weekly basis. The blog will contain detailed evaluation of the module topics, utilising rich media to demonstrate the learning outcomes. Continuous assessment throughout will support the opportunity for learning and teaching.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1, 2, 3, 4	Portfolio	100%	3000 (10 blog entries of 300 words)

**Learning and Teaching Strategies:**

The module will be delivered utilising a SCALE-UP (Student-Centred Active Learning Environment with Upside-down Pedagogies) teaching and learning pedagogy.

SCALE-UP is an active mode of learning, which offers an alternative to traditional lectures. In a SCALE UP class rather than predominantly listening to lectures, a student learns through solving problems, enquiry-based activities and sharing ideas, giving and receiving feedback and teaching each other.

**Syllabus outline:**

Acoustics that affect loudspeaker performance  
Cabinet construction (2D and 3D representation)  
Low frequency transducers  
Low frequency cabinet considerations  
Mid frequency transducers  
Mid frequency cabinet considerations  
Phase correction devices  
High frequency transducers  
High frequency wave guides (Horns)  
Loudspeaker simulation  
Loudspeaker testing

<b>Indicative Bibliography:</b>
<b>Essential reading</b>
Murphy, J. L. (2014). Introduction to Loudspeaker Design (2 <sup>nd</sup> Ed). London: True Audio Toole, F. (2008). Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms. Oxford: Focal Press Zacharoc, N. and Bech, S. (2006). Perceptual Audio Evaluation – Theory, Method and Application: Wiley-Blackwell
<b>Other indicative reading</b>
Dickason, V. (2017). The Loudspeaker Design Cookbook (7 <sup>th</sup> Ed). Oxford: Audio Amateur, Incorporated Audio Engineering Society – Journal and e-Library <a href="http://www.aes.org">http://www.aes.org</a>