Module Descriptor

Title	Acoustics		
Session	2025/26	**Status**	Published
Code	COMP08007	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Colin Grassie		

Summary of Module

This module focuses on the physical and technological aspects of acoustic environment measurement and evaluation, room acoustics calculation and design. Electroacoustics devices and software related to impulse response (IR) capture and reproduction will be investigated. The module includes the following:

• Analysis of measured room acoustics metrics including Reverberation Time (RT60, T30, T20 and EDT) and Clarity Index.

• Evaluation of reverberation parameters such as frequency response, early reflections, and decay time in relation to suitability for inclusion within audio production processing.

• Investigation into the relationship between room acoustic calculation, prediction, and design requirements for a multi-purpose audio reproduction critical listening (control) room.

• Design and proposal for the acoustic construction of a multi-purpose audio production critical listening (control) room.

Initial practical work will be based on the evaluation of acoustics metrics and parameters from given and measured room impulse responses. Room acoustic data analysis will be performed though the use of acoustic analysis software tools and convolution reverb DAW plug-ins. Practical work will conclude in the form of a proposal for the acoustic design of a multi-purpose audio production control room through calculation, prediction, and 3D room design.

Within the module the main topics are:

1. Acoustics measurement metrics.

2. Impulse response and acoustic environment evaluation.

3. Room acoustics calculation and prediction.

4. Industry standards and recommendations for critical listening room design.

- Candidates will understand the significance of the measurement and related metrics of acoustic environments.
- Candidates will perform laboratory experiments and reporting.
- Candidates will understand the relationship between acoustics calculation and acoustic design.

- Candidates will evaluate room / environment impulse responses against reverberation parameters.
- Candidates will understand the importance of related technical industry standards and recommendations
- This module embeds the key "I am UWS" graduate attributes and in particular: Universal and Work Ready

Module Delivery Method	**On-Campus**[1] ☐	**Hybrid**[2] ☒	**Online**[3] ☐	**Work -Based Learning**[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☒	Term 2	☐	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Demonstrate a discerning understanding of a defined range of core theories, concepts, principles and terminology of acoustic environment measurement and related metrics.
L2	Apply knowledge, skills and understanding in using a range techniques and practices that are professional and advanced to the acoustic design of a critical listening room.
L3	Undertake critical analysis, evaluation and synthesis of ideas, concepts and information that are within the common understandings of acoustics design and acoustical control methods.
L4	Use and evaluate numerical and graphical data and convey complex information to a range of audiences and for a range of purposes
L5	

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Knowledge and Understanding (K and U)	**SCQF 8** Develop an understanding of a limited range of physical parameters which apply to electroacoustic audio reproduction systems. Demonstrate a discerning understanding of the principles of acoustic design and acoustic measurement.
Practice: Applied Knowledge and Understanding	**SCQF 8** Apply skills, techniques and practices of room acoustic design and related parameters, a few of which are advanced or complex. Carry out routine lines of investigation into professional level problems and issues related to the implementation of industry standards and recommendations for critical listening room design.
Generic Cognitive skills	**SCQF 8** Critically analyse and evaluate the results of physical measurements to consolidate understanding of reverberation. Develop thinking which can encompass low level technical/mathematical data and its' relevance calculation, prediction and the design process.
Communication, ICT and Numeracy Skills	**SCQF 8** Use a range of standard audio and acoustics software applications to obtain and process files and data. Present numerical and graphical measurement data in conjunction with written reporting
Autonomy, Accountability and Working with Others	**SCQF 8** Manage resources for physical measurement of audio and acoustic data. Exercise autonomy and initiative in some activities at a professional level in room acoustic design.

Prerequisites	**Module Code** COMP07052	**Module Title** Sound Reinforcement Systems
	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours. Theoretical concepts will be presented through guided reading, module notes and contextualised through laboratory demonstrations and practical experiments.

Knowledge and understanding will be gained through Enquiry Based Learning (EBL) and reporting.

Experiential learning will take place through lab group-work collaboration and employing Cognitive Load Theory (CLT).

Practical knowledge and understanding will be gained through Problem Based Learning (PBL) with a minimal amount of supervision.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Tutorial / Synchronous Support Activity	12
Laboratory / Practical Demonstration / Workshop	36
Independent Study	152
Please select	
Please select	
Please select	
TOTAL	200

Indicative Resources

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Everest, F. and Pohlmann, K., 2022. Master handbook of acoustics. 7th ed. New York: McGraw-Hill.

Ballou, G., 2009. Electroacoustic devices. 1st ed. [S.l.]: Focal Press.

Newell, P., 2017. Recording Studio Design. 4th ed. Routledge.

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Lab based (contact = 48) Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Computing**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Creative Computing
Moderator	Derek Turner
External Examiner	Nino Auricchio
Accreditation Details	This module is accredited by JAMES as part of BSc (Hons) Music Technology.
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	2.2

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Written: Laboratory Report.
Assessment 2
Design: Acoustically Controlled Critical Listening Room.
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Report of practical/ field/ clinical work	☒	☐	☐	☒	☐	40	8

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Design/ Diagram/ Drawing/ Photograph/ Sketch	☐	☒	☒	☒	☐	60	12

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	20 hours

Change Control

What	**When**	**Who**