Module Descriptor

Title	Immersive Audio		
Session	2025/26	**Status**	Published
Code	COMP09104	**SCQF Level**	9
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 aims to develop students' knowledge and understanding of the theory and practical application of acoustics and psychoacoustics to immersive audio and environment. Students will investigate the identifiable limiting factors of specific reproduction systems, including systems for 3D audio distribution and reproduction for cinematic, virtual reality (VR) and mobile.

Practical work will be based on multi-dimensional audio capture techniques, and audio asset development, where sound recordings will be post-processed for reproduction in a variety of immersive audio formats.

Students will be encouraged to develop a critical and creative independence through the development and realisation of a soundscape-based project. Evaluation of the quality and effectiveness of capture techniques, channel formatting and applied spatial audio reproduction will be made.

Within the module the main topics are:

1. Spatial Audio Theory

2. Multi-dimensional Audio Capture

3. Immersive Sound Reproduction and Evaluation

• Candidates will understand acoustics and psychoacoustics theory relating to spatial audio.

• Candidates will understand the scope, main areas and boundaries of the applications and reproduction mediums for immersive audio.

• Candidates will evaluate the use microphone techniques for 3D audio capture.

• Candidates will implement the use of a variety of software, hardware, and reproduction systems for 3D audio.

• Candidates will demonstrate an understanding of the linkage between audio capture techniques and reproduction formatting for application.

• Candidates will undertake critical evaluation using appropriate technical and academic discourse.

• This module embeds the key "I am UWS" graduate attributes and in particular: Work Ready and Successful

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 an understanding of the principal theories, concepts, and principles of immersive audio.
L2	Apply knowledge, skills and understanding using a few skills, techniques, practices, and materials that are specialised and advanced in creative immersive audio production.
L3	Undertake critical analysis, evaluation and synthesis of ideas and concepts in immersive audio production and subjective evaluation.
L4	Present and convey, formally and informally, information on standard topics in immersive audio and audio evaluation to a range of audiences.
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:**
Knowledge and Understanding (K and U)	**SCQF 9** Develop knowledge and understanding in one or more specialisms, that is informed by forefront developments in the applications and reproduction mediums for immersive audio. Demonstrate a critical understanding of a range of principal theories, concepts and terminology of audio evaluation parameters and limiting factors of specific immersive formats.

[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

Practice: Applied Knowledge and Understanding	**SCQF 9** Apply a few skills, techniques, practices that are specialised and advanced to multi-dimensional audio capture, post-processing, formatting, and reproduction. Practice in a range of professional level contexts that include a degree of unpredictability related to current capture and reproduction technologies.
Generic Cognitive skills	**SCQF 9** Critically review and consolidate knowledge, skills, practices and thinking in the evaluation of the resultant sonic immersion from physical capture to reproduction of multichannel audio assets. Identify and analyse professional problems and issues in immersive audio reproduction.
Communication, ICT and Numeracy Skills	**SCQF 9** Use a range of standard and specialist audio software and hardware applications to obtain and process audio data Use a range of ICT applications to support and enhance work at this level and adjust features to suit purpose. Present, formally, and informally, information on mainstream topics to a range of audiences within the field of immersive audio.
Autonomy, Accountability and Working with Others	**SCQF 9** Exercise autonomy and initiative in some activities at a professional level within a self-designed project. Practise in ways that show awareness of own and others' roles and responsibilities.

Prerequisites	**Module Code**	**Module Title**
	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	6
Lecture / Core Content Delivery	6
Laboratory / Practical Demonstration / Workshop	36
Independent Study	152
Please select	
Please select	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Paterson, J. and Lee, H., 2021. 3D Audio (Perspectives on Music Production). 1st ed. Routledge. Roginska, A. and Geluso, P., 2017. Immersive Sound: The Art and Science of Binaural and Multi-Channel Audio. 1st ed. Routledge. Rumsey, F., 2012. Spatial audio. 1st 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. 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 forms part of the BSc (Hons) Music Technology, which is accredited by JAMES.
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.2

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Written: Essay
Assessment 2
Practical Portfolio: Immersive Audio Artefact
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
Essay/Critique	☒	☐	☐	☒	☐	40	0

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Portfolio of practical work	☐	☒	☒	☐	☐	60	12

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	12 hours

Change Control

What	When	Who