University of the West of Scotland

Module Descriptor

Title of Module: Immersive Audio			
Code: COMP09104	SCQF Level: 9 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of 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 sound reinforcement, 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

Face-To-Face	Blended	Fully Online	Hybrid C	Hybrid 0	Work-Based Learning
☐	☒	☐	☐	☐	☐

Campus(es) for Module Delivery

The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☒	☐	☐	☐	☐	☐	Add name

Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1	☐	Term 2	☒	Term 3	☐

Learning Outcomes: (maximum of 5 statements)
These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module.
At the end of this module the student will be able to:

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.

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 Level 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.
Practice: Applied Knowledge and Understanding	SCQF Level 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 Level 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 Level **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 Level **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.

Pre-requisites:	Before undertaking this module, the student should have undertaken the following:	
	Module Code: COMP08007	**Module Title:** Acoustics
	Other:	J0LG 35 Sound Production: Acoustics (SCQF level 8) or J01G 35 Sound Production: Spatial Recording and Reproduction (SCQF level 8) or Similar
Co-requisites	**Module Code:**	**Module Title:**

*Indicates that module descriptor is not published.

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.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	6

Tutorial/Synchronous Support Activity	6
Laboratory/Practical Demonstration/Workshop	36
Independent Study	152
	200 Hours Total

**Indicative Resources: (eg. Core text, journals, internet access)

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.

Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Right Harvard referencing style or agreed professional body deviation and in alphabetical order.

(**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:

Students must complete the assessment milestones laid out in the handbook in respect of the submission of CW 1 and CW 2. Students must attend formal lecture and lab sessions.

Equality and Diversity

<table>
<tr><td>The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: <u>UWS Equality, Diversity and Human Rights Code.</u>

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..</td></tr>
<tr><td>(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the school)</td></tr>
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Supplemental Information

Divisional Programme Board	Computing
Assessment Results (Pass/Fail)	Yes ☐No ☒
School Assessment Board	Creative Computing
Moderator	Dr Derek Turner
External Examiner	N. Auricchio
Accreditation Details	This module forms part of the BSc (Hons) Music Technology, which is accredited by JAMES.
Changes/Version Number	1.09

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1: (Category 40%): Written: Essay
Assessment 2: (Category 60%): Practical Portfolio
(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.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Learning Outcome (5)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Essay/Critique	✓			✓		40	

Component 2							
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Learning Outcome (5)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Portfolio of practical work		✓	✓			60	8

Component 3							
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Learning Outcome (5)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Combined Total for All Components						**100%**	**8 hours**

Change Control:

What	When	Who
Further guidance on aggregate regulation and application when completing template	16/01/2020	H McLean
Updated contact hours	14/09/21	H McLean
Updated Student Attendance and Engagement Procedure	19/10/2023	C Winter
Updated UWS Equality, Diversity and Human Rights Code	19/10/2023	C Winter
Guidance Note 23-24 provided	12/12/23	D Taylor
General housekeeping to text across sections. .	12/12/23	D Taylor

Version Number: MD Template 1 (2023-24)