THE GLASGOW SCHOOL: ARt

Glasgow School of Art Course Specification
Course Title: Spatial & Immersive Audio

Please note that this course specification is correct on the date of publication but may be subject to amendment prior to the start of the 2023-24 Academic Year.

Course Code:	HECOS Code:	Academic Session:
USMISIA4		2023-24

1. Course Title:
Spatial & Immersive Audio

2. Date of Approval:	3. Lead School:	4. Other Schools:
PACAAG April 2022	School of Innovation and Technology	N/A

5. Credits:	6. SCQF Level:	7. Course Leader:
20	10	Ronan Breslin

8. Associated Programmes:
BDes Sound for the Moving Image

9. When Taught:
Semester 2

10. Course Aims:
In this course students will develop advanced understanding and skillsets for the conceptualisation, design and development of immersive and spatial audio-visual (AV) experiences and environments Students will develop an understanding of, and experience with, current technologies and methodologies for the development of spatial audio in a visual environment.   - To allow students to develop and expand knowledge and understanding of conceptual workflows and contemporary tools for creating interactive audio-visual environments.   - To equip students with a wide range specialist practical skills for the creation of advanced interactive audio-visual systems   - To develop expertise in the technologies and methodologies underpinning spatial audio in a visual environment

11. Intended Learning Outcomes of Course:
By the end of this course students will be able to: Apply a range of specialised skills and research strategies in the development of a complex immersive Audio Visual (AV) experience or environment

- Deploy, adapt and design contemporary software and hardware tools to implement a complex interactive AV environment
- Formally present an immersive environment to a mixed audience of non-experts and experts
- Demonstrate a critical understanding of the principal theories, concepts and principles of spatial audio
- Design and implement an original project in spatial audio using a range of relevant software and hardware tools
- Exercise autonomy and initiative in the realisation of an individual project

12. Indicative Content:

Much of the course will be workshop based supported by a series of lectures, seminars and tutorials. Students will undertake practical projects that require the application of technical knowledge and will also be required to demonstrate a critical understanding of key issues in spatial and interactive audio.

Spatial Visuals
Using 360 cameras, using 3D environments in Unity.

Spatial Audio
Fundamental theory, basic maths and physics for spatial audio
Practical recording and mixing methods for spatial audio
Ambisonics, including fundamentals and recording techniques

Immersive Spatial Audio

13. Description of Summative Assessment Methods:

Assessment Method	Description of Assessment Method	Weight %	Submission week (assignments)
Practical Project with presentation and 1000 word report.	Tutor review of project and report	100	Week 12

13.1 Please describe the Summative Assessment arrangements:

Assignment will be scheduled across the Semester.

Assessment will assess students' ability to conceptualise, develop and realise an original spatial audio-visual installation, film or environment , using a range of appropriate tools as defined by the student's initial project proposal. A written critical reflection will assess student's understanding of spatial audio theory and concepts and their applications.
A presentation will assess student's ability to critically reflect upon and review the created work.

14. Description of Formative Assessment Methods:

Engagement with formative assessment is a mandatory requirement.
Formative review sessions for the assessment will take place at week 6 and include a presentation and peer review. Students will present work in progress and describe their concept and explain how they intend to realise this concept.

Individual feedback on work in progress will also be available during scheduled lab sessions.
14.1 Please describe the Formative Assessment arrangements:
<mark>Work in progress presentations will take place two or three weeks prior to the deadline for each submission.</mark>

15. Learning and Teaching Methods:	
Formal Contact Hours	**Notional Learning Hours**
36	200
15.1 Description of Teaching and Learning Methods:	
Timetable: 3 contact hours per week split across lectures, labs, seminars and tutorials	

16. Pre-requisites:
Entry to Stage 4 of the programme

17. Can this course be taken by Exchange/Study Abroad students?	No
18. Are all the students on the course taught wholly by distance learning?	No
19. Does this course represent a work placement or a year of study abroad?	No
20. Is this course collaborative with any other institutions?	No
20.1 If yes, then please enter the names of the other teaching institutions:	
N/A	

21. Additional Relevant Information:
N/A

22. Indicative Bibliography:
Readings will be drawn from a range of sources, such as:

Cipriani, A., Giri, M., 2014. *Electronic Music & Sound Design: Theory & Practice with MaxMSP*. Componet.

Collins, K., Kapralos, B., Ressler, H., 2014. *The Oxford Handbook of Interactive Audio*. Oxford University Press (USA).

Elen, R., 2015. *Ambisonic.net,* accessed March 1st, 2016, http://www.ambisonic.net/

Farnell, A., 2010. *Designing Sound*. MIT Press.

Furness, R.K., 1990. *Ambisonics – An Overview*. AES Conference: Proceedings of 8th International Conference: The Sound of Audio (May 1990).

Hodges, P., 2011. *Ambisonic Information*, accessed March 1st, 2016,http://ambisonic.info/index.html

Inglis, C., 1977 (updated 2011). Directional Sound Reproduction "Stereo, Quad, and beyond" A public lecture by Chilton Inglis (Audio Unit, BBC Scotland) for the Scottish section of the Institute of Electronic and Radio Engineers, in Edinburgh and Glasgow on 9th and 10th November 1977.

Lavallee, M., 2015. *Ambisonia,* accessed 1st March, 2016, http://www.ambisonia.com/

Roginska, A., Geluso, G., 2018. *Immersive Sound: The Art and Science of Binaural and Multi-Channel Audio.* Routledge.

Rumsey, F., 2013. *Spatial Audio*. Focal Press.

Woon Seng Gan, Jung-Woo Choi (Eds.), 2017. *Spatial Audio.* MDPI AG.