Module Descriptor

Title	Adv. Audio Signal Processing		
Session	2026/27	**Status**	
Code	COMP10008	**SCQF Level**	10
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Robert Goldie		

Summary of Module

This module will provide a vehicle for further deepening the students' practical exposure to more advanced tools and concepts of synthesis as utilised in music technology. Students will undertake the research and critical assessment of existing synthesis methods and utilise a visual programming language to develop a bespoke instrument of their own design.

Topics presented fall within the following categories:

- Principles of Synthesis
- MIDI Protocols
- Research, design, and implementation of synthesis methods
- Introduce various means of synthesis commonly used in sound design
- Research and critique existing software synthesisers including modulation methods
- Explore the various applications of MIDI for creative purposes within a visual processing language platform

This module embeds the key "I am UWS" graduate attributes and in particular: Critical Thinking, digital literacy, encourages autonomy and rewards creative innovation.

Module Delivery Method	**On-Campus**[1]	**Hybrid**[2]	**Online**[3]	**Work -Based Learning**[4]
	☒	☐	☐	☐

[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

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 knowledge that covers and integrates most of the principle areas, features, terminologies and conventions associated with instrument creation and sound synthesis.
L2	Apply knowledge, skills and understanding, using a wide range of the principal professional skills, techniques, practices associated with instrument creation and sound synthesis.
L3	Demonstrate some originality and creativity in the design and creation of instrument(s) for the purposes of performance and sound synthesis.
L4	Exercise autonomy and initiative in the planning and delivery of an audio software engineering project.
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 10** Demonstrate: · knowledge that covers and integrates most of the principal areas, terminology and conventions of sound synthesis · detailed knowledge and understanding of specialist software for sound design
Practice: Applied Knowledge and Understanding	**SCQF 10** Develop skills and practices in computer based sound synthesis which are specialised and advanced
Generic Cognitive skills	**SCQF 10** Consolidate knowledge, concepts, skills, practices and methodology in the production of computer based synthesised sound. · Demonstrate some originality and creativity in the design of software instruments and the production of audio tracks. · Integrate relevant knowledge from a variety of sources
Communication, ICT and Numeracy Skills	**SCQF 10** · Demonstrate numeracy in the exercise of a computer language for audio synthesis.

	· Generate and interpret a graphical representation of computer code for instrument design. · Communicating effectively and appropriately in commercial style, numerate, written reports produced using standard office ICT equipment and software.
Autonomy, Accountability and Working with Others	**SCQF 10** Exercise autonomy and initiative in utilising and extending the presented material using reference materials. · Systematically identifying and addressing personal learning needs.

Prerequisites	**Module Code** COMP09010	**Module Title** Audio Signal Processing
	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.	
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)
Lecture / Core Content Delivery	12
Tutorial / Synchronous Support Activity	12
Laboratory / Practical Demonstration / Workshop	24
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: Cipriani, A (2020) Electronic Music and Sound Design - Theory and Practice with Max 8 - Volume 1. 4th edn. Contemponet Cipriani, A (2019) Electronic Music and Sound Design - Theory and Practice with Max 8 - Volume 2. 3rd edn. Contemponet Runsey, F (2014) Sound and Recording: Applications and Theory. 7th edn. 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	N Auricchio
Accreditation Details	JAMES

Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	3.13

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Research and critical analysis of synthesis methods for a software instrument (25%)
Assessment 2
Planning, design, and development of a software instrument and the creation of a user-manual (75%)
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**
Presentation Document	☒	☐	☐	☐	☐	25	4

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Portfolio	☐	☒	☒	☒	☐	75	40

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	44 hours

Change Control

What	**When**	**Who**
Chage of Component 1 to Presentation document	21/03/2025	Robert Goldie
Assessment 1 subject changed	13/03/2026	Robert Goldie
