Module Definition Form (MDF)

Module code: MOD007364	**Version:** 2 **Date Amended:** 22/Jan/2025

1. Module Title
Core Skills for Audio

2a. Module Leader
Tim Webster

2b. School
Cambridge School of the Creative Industries

2c. Faculty
Faculty of Arts, Humanities, Education and Social Sciences

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Audio and Music Technology BSc (Hons) Audio and Music Technology [CPY]		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module introduces you to the fundamental ideas of maths and electronics and their application to audio systems and supports the development of core mathematical skills needed for successful study. The module also introduces key mathematical techniques used in audio, such as exponentials, logarithms and trigonometry.

The theory is supplemented by practical experiments using hardware and circuit simulation software. This allows you to compare measured results with theory and shows the effects of component tolerances.

The practical work also gives you the experience of the presentation and interpretation of manufacturers' data for real components, and lets you explore the limitations of laboratory techniques and instruments.

This module also introduces analogue electronic circuits used in audio. It reviews the fundamentals of analogue components including resistors, capacitors and inductors, and shows how simple circuits are designed using these components. It introduces diodes, transistors and operational amplifiers and explains their equivalent circuit models. It also introduces the measurement and analysis tools used in the electronics industry. Audio applications are discussed, including filters, crossovers and amplifiers. Circuit prototyping techniques are introduced and compared.

6b. Outline Content

· Algebra, functions

· Geometry, trigonometry

· Polynomials

· Vectors

· Logic families (TTL, CMOS, ECL)

· Number systems (binary, octal, denary, hexadecimal)

· MIDI messages

· Representations of negative numbers, digital audio, ADCs and DACs

· Decoders and encoders

· Sequential logic (SR, D, JK memory elements), counters

· Circuit simulation using software

· Introduction to laboratory instruments

· Review of DC circuit theory

· Reactance

· Resonance

· Filters

· Diodes and transistors

· Operational amplifiers

· Transducers and other commonly used components

· Practical techniques: soldering, breadboards, stripboard

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

Electronics laboratory with components and test equipment.

PCs with circuit simulation software.

Macs with specialist software

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Know how to express and manipulate relationships in mathematical form.
2	Knowledge and Understanding	Understand the fundamental components of digital and analogue electronic circuits.
3	Knowledge and Understanding	Use the theory to analyse and design simple digital and analogue electronic circuits.
4	Intellectual, practical, affective and transferrable skills	Apply mathematical methods to a variety of practical audio situations.
5	Intellectual, practical, affective and transferrable skills	Apply digital and analogue circuit theory to practical systems.
6	Intellectual, practical, affective and transferrable skills	Write simple programs in C.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	30	1-6	3-hour lecture in weeks 1-6 and 8-11
Other teacher managed learning	30	1-6	2-hour laboratory in weeks 1-6 and 8-11 4-hour feedback session in week 7 6-hour revision session in week 12
Student managed learning	240	1-6	Experiments, coursework and revision
TOTAL:	300		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	2, 3, 5	20 (%)	Fine Grade	30 (%)
Electronics logbook – 1500 word equivalent					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	6	30 (%)	Fine Grade	30 (%)
Programming coursework – 1500 word equivalent					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
012	Coursework	1, 2, 3, 4, 5	50 (%)	Fine Grade	30 (%)
Open-book, online test/quiz administered on Canvas 2 hours					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]