

Module Code:	CMT102
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Module Title:	Sound Synthesis & Sampling
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Level:	4	Credit Value:	20
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Cost Centre(s):	GACT	<u>JACS3</u> code:	J930
		<u>HECoS</u> code:	100222

Faculty	Arts, Science and Technology	Module Leader:	Mike Wright
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Scheduled learning and teaching hours	48 hrs
Guided independent study	152 hrs
Placement	0 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
BSc (Hons) Music Technology	✓	<input type="checkbox"/>
BSc (Hons) Sound Technology	✓	<input type="checkbox"/>
BA (Hons) Sound Design	✓	<input type="checkbox"/>

Pre-requisites

Office use only

Initial approval: August 16

Version no:1

With effect from: 01/09/2019

Date and details of revision: Reapproved by AB 13/03/18 as part of reval for
BA (Hons) Sound Design

Version no:2

Module Aims

The module will explore the basic waveforms used for synthesis and develop models that emulate various forms of synthesis. The structural blocks of a synthesiser will be investigated and modelled. The student will be introduced to the process of sampling and how to create sampled audio material using hardware and software samplers.

Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

At the end of this module, students will be able to		Key Skills	
1	Develop a model for various forms of audio synthesis.	KS10	KS5
		KS4	
2	Implement a design model for specific synthesis parameters.	KS10	KS3
		KS4	
3	Employ and use industry samplers.	KS4	KS5
		KS10	
4	Understand the application and limitation of present technology	KS4	
		KS5	

Transferable skills and other attributes

Gather, organise and deploy ideas and information.
Deliver work to a given specification and format.
Demonstrate knowledge of modern synthesis and sampling technology

Derogations

None

Assessment:

Indicative Assessment Tasks:

The learning outcomes will be assessed by submission of a portfolio based on coursework. The student will have to *sample* a physical acoustic instrument, followed by computer sampling to produce the digital format. Further processing to be carried out to incorporate the derived sample into a production piece. Synthesis component will require the student to evaluate an established technology and develop a suitable software model to emulate said technology.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1-4	Portfolio	100%	N/A

Learning and Teaching Strategies:

The module will be presented to students through a series of lectures and practical demonstrations of hardware and software. Use of the sound studio and recording equipment will be required. Tutorials and practical investigation of various areas of sound manipulation. Group discussion and collaboration will be encouraged to aid development of the students' knowledge.

Syllabus outline:

- Sound Synthesis terminology and techniques: The nature of sound and harmonic structures. Use of VCO, VCA, VCF, Envelopes, Filter design, modulation and Ring modulation.
- Types of Synthesis: Subtractive, additive, FM, granular, Walsh.
- Physical modeling: Use of modeling techniques to implement structures.
- Programming: Industry standard software; application and programming to apply sampling technology within a sound studio. Sampling with respect to sequencing software.

Indicative Bibliography:
Essential reading
McGuire, S. & Van de Rest, N. (2016). The Musical Art of Synthesis. Focal Press Russ, M. (2012). Sound Synthesis and Sampling Focal Press Shepard, B. K. (2013). Refining Sound; A practical Guide to Synthesis and Sampling. Oxford Uni' Press
Other indicative reading
Miranda, E, R. (2002). Computer Sound Design. Focal Press https://www.soundonsound.com/sos/mar00/articles/synthsecrets.htm