



<b>Title:</b>	Sound Synthesis <b>APPROVED</b>
<b>Long Title:</b>	Sound Synthesis & Manipulation
<b>Module Code:</b>	MUSC9009
<b>Duration:</b>	1 Semester
<b>Credits:</b>	5
<b>NFQ Level:</b>	Expert
<b>Field of Study:</b>	Music & Performing Arts
<b>Valid From:</b>	Semester 1 - 2017/18 ( September 2017 )
<b>Module Delivered in</b>	<a href="#">2 programme(s)</a>
<b>Module Coordinator:</b>	MARIA JUDGE
<b>Module Author:</b>	HUGH MC CARTHY
<b>Module Description:</b>	The student will learn various techniques of sound synthesis and the practical application of these principles in a variety of software environments
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Display a comprehensive understanding of the fundamentals of sound synthesis.
LO2	Creatively use of a variety of sound synthesis tools, as well as a working knowledge of several others.
LO3	Create new sounds, and emulate existing real-world sounds for use in other projects.
LO4	Creatively use different software and programming environments to manipulate audio related signals and hardware.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b>	
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named MTU module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	



**Module Content & Assessment**

**Indicative Content**

**Sound Synthesis Techniques**

Additive synthesis; Subtractive synthesis; Frequency modulation synthesis; Sampling; Composite synthesis; Phase distortion; Waveshaping; Granular synthesis; Vector synthesis; Physical modeling; Digital Signal Routing.

**Audio Installations**

Microcontrollers, Hacking hardware, Sensors

**Assessment Breakdown**

	%
Course Work	100.00%

**Course Work**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	CSound Project	1,3	20.0	Week 4
Project	CSound Project, Max/MSP	1,2,3,4	30.0	Week 7
Project	Pure Data, CSound and other environments	1,2,3,4	50.0	Week 12

No End of Module Formal Examination

**Reassessment Requirement**

**Coursework Only**

*This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.*

**The institute reserves the right to alter the nature and timings of assessment**

**Module Workload**

<b>Workload: Full Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Theory	0.5	Every Week	0.50
Lab	Application	1.5	Every Week	1.50
Independent & Directed Learning (Non-contact)	No Description	5.0	Every Week	5.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				2.00

**This module has no Part Time workload.**

## Module Resources

### *Recommended Book Resources*

- Richard Boulanger (Ed.) 2000, *The Csound Book: Perspectives in Software Synthesis, Sound Design, Signal Processing and Programming* [ISBN: 978-0262522618]
- Perry R. Cook 2002, *Real Sound Synthesis for Interactive Applications*, Routledge [ISBN: 978-1568811680]
- Curtis Roads 1996, *The Computer Music Tutorial*, MIT Press [ISBN: ISBN:978-0262680820]
- Richard Boulanger (Editor), Victor Lazzarini (Editor) 2010, *The Audio Programming Book*, The MIT Press [ISBN: 9780262014465]
- Johannes Kreidler 2013, *Loadbang*, 2nd Ed., Wolke Verlagsges. MbH [ISBN: 9783955930554]

*This module does not have any article/paper resources*

*This module does not have any other resources*

**Module Delivered in**

<b>Programme Code</b>	<b>Programme</b>	<b>Semester</b>	<b>Delivery</b>
CR_GMUTE_9	<a href="#"><u>Master of Arts in Music and Technology</u></a>	2	Mandatory
CR_GMUST_9	<a href="#"><u>Master of Science in Music and Technology</u></a>	2	Mandatory