MODULE SPECIFICATION

SPEECH AND MUSICAL ACOUSTICS

This version of the specification was approved for its first delivery in the academic year 2021/22

Short Module Title:

Module Description:

Speech and Music are two of the most important signals in acoustics and audio. This module is about how these sounds are made, how they can be modelled and synthesised, and also how listeners respond to them. It covers a very diverse range of disciplines including physics, psychology and musicology.

STANDALONE MODULE

Will this module be marketed as a standalone module? No, this module will not be marketed as a stand alone module

Entry Requirements:

Module Level	Level 6	Module Code	H341 30034
Module Credit Value	20	HECoS Code	
Owning School	School of Science, Engineering and En...		
Contributing School		Percentage delivered by another school	0

Is this module available to International Students? Yes

DELIVERY DETAILS

CRN	*Semester Part Code*	Campus
50994	*S4 - September Start, Trimesters 1&2 (Long Thin)*	University of Salfo...
	S1 - September Start, Trimester 1 (Short Fat)	
	S1 - September Start, Trimester 1 (Short Fat)	
	S1 - September Start, Trimester 1 (Short Fat)	

	S2 - September Start, Trimester 2 (Short Fat)	
	B1 - January Start, Trimester 1 (Short Fat)	
	S2 - September Start, Trimester 2 (Short Fat)	
	S2 - September Start, Trimester 2 (Short Fat)	

For a full set of module CRNs, please go to PaMIS or contact the Quality and Enhancement Office on QEO@salford.ac.uk

INDICATIVE LEARNING HOURS

Lecture:	48	Practical Classes and Workshops:	
Seminar:		Supervised studio/workshop time:	
Tutorial:	6	Fieldwork:	
Project supervision:		External Visits:	
Demonstration:		Work Based Learning:	
Placement:		Year Abroad:	
Guided Independent Study	146	Total:	200
		Other (including additional placement hours):	

INDICATIVE LEARNING OUTCOMES

Aims:

1. A systematic understanding of human perception of speech and music.
2. A detailed understanding of speech and musical sound generation, analysis and modelling techniques.

3. An ability to synthesise, process and analyse speech and musical sounds.

Intended Learning Outcomes: Knowledge and Understanding:

1. Analyse different musical instruments and formulate a range of synthesis models to build understanding.

2. Explain the mechanisms of speech and musical sound production and use state-of-the-art procedures for modelling the phenomena.

3. Apply knowledge from psychology and neuroscience to speech and music perception.

4. Manipulate speech and music using techniques at the forefront of the discipline.

Intended Learning Outcomes: Key Subject Specific Skills:

MODULE REQUIREMENTS

Pre-Requisites:	Co-requisites:

ETHICS

Does this module require ethical approval?	No ethical approval is required
Will students require individual ethical approval for an assessment task?	No ethical approval is required.

ASSESSMENT TASKS

Is this module eligible for compensation?	Yes	*Mark Calculation Method*	Method A

KIS Type	*Description*	*Pass/ Fail?*	*ILO of this task*	*Weight*	*Duration/ Word Count*	*Component Pass Req'd?*	*eSubmission*	*Organiser?*
Coursework	*Written up practical task*	☐	*1,3*	*30*	*4000 wo...*	*No*	*Yes*	*School*
Coursework	*Specified tasks from integrated tutorial*	☐	*1-4*	*70*	*3000 wo...*	*No*	*Yes*	*School*
		☐				*No*	*Yes*	
There is no Programme Specific Regulation for additional assessments								
		☐					*Yes*	
		☐					*Yes*	
		☐					*Yes*	

Learning Teaching and Assessment Strategies:

Interactive lectures rich in sound examples draw on the state-of-the art in academia and industry. The lectures are supported by integrated tutorials and practical demonstrations using MATLAB or similar. Students further develop their understanding and get formative assessment through the weekly tutorials. In addition, online drop-in MATLAB time slots are available to give students support around coding issues for the first assessment. Further support is given via the VLE discussion board, email and where necessary ad-hoc meetings via Teams.

The first assessment will be a practical task of analysing and synthesising sounds through a programming language such as MATLAB or Python. Students will be given detailed feedback to support their learning.

The second assessment will be a series of tasks taken from the integrated tutorials allowing students to demonstrate a broader knowledge across the curriculum. This summative assessment at the end of the trimester will provide less detailed feedback.

Reassessment Strategies:

Students will be asked to redo the failed assessments.

Syllabus Outline:

- Signals:
  - P roperties of musical notes and the human voice
  - A nalysis of speech and musical signals
  - S ignal processing of speech and musical signals
- Physics
  - Sound production in musical instruments
  - Sound production in speech and singing.
- Emulative and non-emulative synthesis of musical instruments and voice :
  - Additive and TVPAS
  - Subtractive
  - Modulation
  - Physical modelling using waveguides
  - Speech
  - Wave-shaping
- Perception of musical and speech sounds:
  - Isolated musical sounds and timbre
  - Beats, consonance and dissonance, intervals and scales
  - Musical and speech psychology and neuroscience

Indicative texts:

https://salford.leganto.exlibrisgroup.com/leganto/public/44SAL_INST/lists/6810829170001611?auth=LOCAL&section=6810829180001611

Up to date lists should be accessed at www.salford.ac.uk/readinglists

IMPLEMENTATION

Module Leader:	***Display Name***
	Trevor Cox,#,#School of Science,, Engineering & Environment,...
Approval Date:	22/06/2021

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