

## MODULE SPECIFICATION

Please contact the Quality Enhancement Office for guidance completing this form on [QEO-General@salford.ac.uk](mailto:QEO-General@salford.ac.uk)

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Date of completion of this version of Module Specification: 05/04/2017				
Date of approval by the PARP: 09/05/2017 Editorial amend: 21/02/2018				
1. Module Title: (Full title and short title no more than 30 characters) Speech and Musical Acoustics			2.CRN: 50994	
3.University module code: H341 30034		4.HESA/JACS subject area code <sup>1</sup> : H600 H341		
5.Level: Level 6	6.Credit Value: 20	7.ECTS Value <sup>ii</sup> : 10	8.Length of module in semesters: 1	9.Month(s) in which to be offered <sup>iii</sup> : September
10.Module Status <sup>iv</sup> New	11.Title of Module being replaced ( <i>if any</i> ): Speech & Signal Processing CRN 35527		12.With effect from <sup>v</sup> (academic year): September 2018	
13.Originating School: School of Computing, Science & Engineering		14.Module Leader(s) Trevor Cox		
15.Programme(s) in which to be offered <sup>vi</sup> : BEng (Hons) Acoustical & Audio Engineering BEng (Hons) Acoustical & Audio Engineering with Professional Experience MEng (Hons) Acoustical & Audio Engineering MEng (Hons) Acoustical & Audio Engineering with Professional Experience BEng (Hons) Electronic Engineering BSc (Hons) Physics with Acoustics BSc (Hons) Physics with Acoustics with Professional Experience MPhys (Hons) Physics with Acoustics MPhys (Hons) Physics with Acoustics with Professional Experience BSc (Hons) Pure & Applied Physics BSc (Hons) Pure & Applied Physics with Professional Experience BSc (Hons) Physics BSc (Hons) Physics with Professional Experience MPhys (Hons) Physics MPhys (Hons) Physics with Professional Experience BSc (Hons) Physics with Foundation Year BSc (Hons) Music, Production and Sound Science BSc (Hons) Music, Production and Sound Science with Professional Experience				
16.Pre-requisites ( <i>between levels</i> ):		None	17.Co-requisites ( <i>within a level</i> ): None	
18.Indicative learning hours (breakdown of hours required) <sup>vii</sup> 200				
Lecture	33	Fieldwork		
Seminar		External visits		
Tutorial	11	Work based learning		
Project supervision		Guided independent study		156

Demonstration Practical classes and workshops		Placement					
Supervised time in studio/workshop		Year abroad					
Other – please specify <sup>viii</sup>							
19. Percentage of module taught by School(s) other than originating School: 0%							
20. Aims of Module <sup>ix</sup> : (maximum of 5)							
<ol style="list-style-type: none"> <li>1. A systematic understanding of human perception of sound and its application in a speech and musical context.</li> <li>2. A detailed understanding of speech and musical sound generation, analysis and modelling techniques.</li> </ol>							
21. Intended Learning Outcomes <sup>x</sup>							
<u>Knowledge and Understanding (maximum of 5)<sup>xi</sup></u>							
On successful completion the student will be able to:							
<ol style="list-style-type: none"> <li>1. Analyse different musical instruments and formulate mathematical models to better understand / improve them.</li> <li>2. Explain the mechanisms of speech production and procedures for modelling, at the forefront of the discipline.</li> <li>3. Apply a detailed knowledge of speech perception to speech synthesis and recognition.</li> <li>4. Apply knowledge from psychology and neuroscience to speech and music perception.</li> </ol>							
<u>Transferable/Key Skills and other attributes (maximum of 5)</u>							
On completion the student will have had the opportunity to:							
<ol style="list-style-type: none"> <li>5. Appreciate the range of academic sources in which current research is reported.</li> <li>6. Numeracy: Advanced engineering mathematics for analysis and design.</li> <li>7. Managing Learning: tutorials in own time.</li> <li>8. Problem Solving: applying the techniques in tutorials and examination</li> </ol>							
22. Module mark calculation: Method A							
23. Assessment components (in chronological order of submission/examination date)							
Denote final assessment component in box marked <b>final assessment component (99)</b>							
Type of assessment	Identify which ILO is met by number <sup>xii</sup>	Weighting %	Duration	Word count	Component pass required <sup>xiii</sup>	E Submission	Assessment organised by
Assignment	1,6-8	30		3000 words	No	No	School
					Choose an item.	Choose an item.	Choose an item.
<b>Final assessment component (99) Exam</b>	1-8	70	2 hours	n/a	No	No	SID
24. Is ethical approval for the module required?	No		25. Is ethical approval for an assessment component required? <sup>xiv</sup>	No			
26. Learning, teaching and assessment strategies:							
<p>Lectures supported by integrated tutorials and practical demonstrations using MATLAB or similar.</p> <p>Formative assessment will be provided through weekly tutorials.</p> <p>Assignment will assess ability of student to carry out musical synthesis in MATLAB or similar.</p> <p>Exam will assess the student's understanding of all aspects of the module.</p>							
27. Syllabus outline:							
<ul style="list-style-type: none"> <li>• Objective and subjective parameters of isolated musical sounds.</li> <li>• Beats, consonance and dissonance, intervals and scales.</li> <li>• Timbre perception</li> <li>• Emulative and non-emulative sound synthesis techniques</li> </ul>							

- Physical Modelling as a means of sound synthesis
- Physics of strings, wind and percussion instruments
- Physics of speech and singing
- Musical and speech psychology and neuroscience
- Speech analysis, synthesis and recognition.

28. Indicative texts and/or other learning materials/resources<sup>xv</sup>:

- HOLMES, W. & HOLMES, J., Speech Synthesis and Recognition, 2001, Taylor & Francis
- OWENS, F.J., Signal Processing of Speech, 1993, Macmillan
- Plus reading list from current musical acoustics module, <https://salford.rl.talis.com/lists/CAE9E6BD-3C30-3B77-0EF3-5955BAB3D743.html>

After initial approval, up to date reading lists can be accessed at <https://salford.rl.talis.com/index.html>

For Office Use only:

QEO Comments:

- i See UoS guidance notes on selecting JACS codes ([http://www.planning.salford.ac.uk/jacs\\_codes/](http://www.planning.salford.ac.uk/jacs_codes/)) see HESA JACS Codes webpage <http://www.hesa.ac.uk/index.php/content/view/full/356/233/>
- ii The ECTS value is half of the module credit value
- iii Please indicate the month (s) in which delivery of the module will commence.
- iv Amendments to the title or credit value constitute a new module.
- v If the delivery month of the module is to be available for different intakes of a programme, please indicate this here. E.g. Module effective from Sept 2014 – to state the module is to be available for Sept 2014 intake & Feb 2014 intake.
- vi The module will only be attached to programmes specified in this section. Any approved module can be available as a stand alone module.
- vii These categories are used for the Key Information Set which currently applies only to full time undergraduate students only but please include for all students – for more information including definitions see [http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/contact\\_hours.pdf](http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/contact_hours.pdf) and [http://www.hesa.ac.uk/component/option.com\\_studrec/task.show\\_file/Itemid,233/mnl,13061/href.Calculations\\_methods.html/#LearningandTeaching](http://www.hesa.ac.uk/component/option.com_studrec/task.show_file/Itemid,233/mnl,13061/href.Calculations_methods.html/#LearningandTeaching)
- viii The 'other' category should not be used for learning undertaken by full undergraduate students as 'other' is not used in KIS categories
- ix The aims should express the purpose of the module.
- x The intended learning outcomes should detail the knowledge, understanding and skills that students will be able to demonstrate on successful completion.
- xi In some circumstances it may be necessary to have more than 5 intended learning outcomes. You will be asked to provide your rationale for this in discussion at the USP.
- xii For example, if the assessment is an essay and the essay meets ILOs number 1-4 and 6-7, state 1-4,6-7
- xiii If Method B is used for module mark calculation, indicate Yes to specify the assessment component(s) to be passed in order to pass the module
- xiv Please specify component(s) for which ethical approval is required.
- xv The "Indicative texts and/or learning materials/resources" box should include a maximum of 5 items for new modules; for existing modules the box should just include a link for USP reviewers and readers to the comprehensive reading list at <http://lasu.salford.ac.uk>