Liverpool John Moores University

Title:	DIGITAL SOUND AND AUDIO PRODUCTION
Status:	Definitive
Code:	**5011COMP** (102946)
Version Start Date:	01-08-2011
Owning School/Faculty:	Computing and Mathematical Sciences
Teaching School/Faculty:	Computing and Mathematical Sciences

Team	Leader
Martin Hanneghan	Y

Academic Level:	FHEQ5	**Credit Value:**	12.00	**Total Delivered Hours:**	26.00
Total Learning Hours:	120	**Private Study:**	94		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	12.000
Practical	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	To develop an audio solution for a typical problem scenario.	50.0	
Exam	AS2	Examination	50.0	2.00

Aims

To understand the hardware and software that is used in computer audio and digital music production.
To explain the principles of sound as a physical phenomenon and the different forms of digital sound representation.
To understand how analogue audio signals can be captured, analysed and processed digitally.

Learning Outcomes

After completing the module the student should be able to:

1 Explain the principles of D/A and A/D conversion in relation to audio signals.
2 Examine the role of audio hardware and software components in computer-based systems.
3 Describe the techniques used for analysing and manipulating digital audio signals
4 Use a range of audio production techniques to develop audio solutions.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Audio solution	2	4
Exam	1	3

Outline Syllabus

Introduction to analogue and digital sound.
A/D conversion.
Sampling, oversampling, foldover and aliasing.
Quantisation schemes.
Encoding mechamisms.
D/A conversion.
Synthesis techniques: wavetable, FM additive, subtractive.
Filtering.
Spectrum analysis.
The MIDI protocol, MIDI devices and control.
Sequencing and MIDI programming.
Mixing and post-production techniques.

Learning Activities

Lectures will be accompanied by workshop-based demonstration sessions and hands-on practical sessions. Theoretical knowledge will be assessed in guided tutorial sessions.

References

Course Material	Book
Author	Rumsey, F.
Publishing Year	2004
Title	Desktop Audio Technology: Digital Audio and MIDI

	Principles
Subtitle	
Edition	
Publisher	Focal Press
ISBN	0240519191

Course Material	Book
Author	Pohlmann, K. C.
Publishing Year	2007
Title	Principles of Digital Audio
Subtitle	
Edition	5th
Publisher	McGraw-Hill Education
ISBN	0071441565

Course Material	Book
Author	Rumsey, F., McCormick, T.
Publishing Year	2002
Title	Sound and Recording
Subtitle	
Edition	4th
Publisher	Focal Press
ISBN	024051680X

Course Material	Book
Author	Kientzle, T.
Publishing Year	1998
Title	A Programmers Guide to Sound
Subtitle	
Edition	
Publisher	Addison Wesley
ISBN	0201419726

Course Material	Book
Author	Penfold, R. A.
Publishing Year	1995
Title	Practical MIDI Handbook
Subtitle	
Edition	
Publisher	Camino Publishing Group
ISBN	1870775368

Course Material	Book
Author	Roads, C.
Publishing Year	1998
Title	The Computer Music Tutorial
Subtitle	

Edition	
Publisher	MIT Press
ISBN	0262680823

Notes

This module deals with the various technologies surrounding digital audio and the production of audio and music using computer-based systems, including sound capture, processing, filtering, encoding and playback.