

## Liverpool John Moores University

Title: COMPUTER AUDIO TECHNOLOGY  
Status: Definitive  
Code: **4011COMP** (117201)  
Version Start Date: 01-08-2014

Owning School/Faculty: Computing and Mathematical Sciences  
Teaching School/Faculty: Computing and Mathematical Sciences

Team	Leader
Martin Hanneghan	Y

**Academic Level:** FHEQ4      **Credit Value:** 24.00      **Total Delivered Hours:** 74.00  
**Total Learning Hours:** 240      **Private Study:** 166

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Practical	24.000
Tutorial	24.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	AS1	Technological task - An individual task to produce a multi-channel sound clip suitable for use in an audio book.	50.0	
Exam	AS2	Examination.	50.0	2.00

### Aims

*To understand the hardware and software that is used in computer-based audio and music production.*

*To explore the techniques employed to digitally edit and manipulate audio and musical performances.*

*To demonstrate the activities and skills required during the various workflow stages of audio production.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Recognise and define the primary components of a computer-based audio production environment.
- 2 Examine the practical role of audio hardware and software components in computer-based DAWs.
- 3 Define the techniques used for manipulating both digital audio signals and digital performance data and formulate an appropriate workflow to enable this manipulation to take place.
- 4 Demonstrate a range of audio editing and production techniques to develop custom audio solutions.

## **Learning Outcomes of Assessments**

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

Multi-channel sound clip	2	4
Examination	1	3

## **Outline Syllabus**

*Introduction to sound*

*Number bases, audio and computing*

*Computer audio technology*

*Computer audio production and workflow*

*Introduction to Pure Data*

*Digital Audio Workstations (DAWs)*

*Sampling theory and practice: Analogue to digital conversion*

*Digital to analogue conversion*

*Digital audio editing basics*

*Understanding and analysing audio: deconstruction*

*Fundamentals of sound synthesis*

*Subtractive synthesis and wavetables*

*The MIDI protocol, MIDI devices and control*

*Sequencing and MIDI programming*

*DSP, effects and filters*

*Plug-ins and virtual instruments*

*Advanced digital audio editing techniques*

*Spectrum analysis*

*Multichannel audio and surround sound placement*

*Time codes and synchronisation*

*Intermediate programming concepts in Pd*

*Developing a complete virtual instrument with Pd*

## 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

<b>Course Material</b>	Book
<b>Author</b>	Francis Rumsey
<b>Publishing Year</b>	2004
<b>Title</b>	Desktop Audio Technology: Digital Audio and MIDI Principles
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Focal Press
<b>ISBN</b>	9780240519197

<b>Course Material</b>	Book
<b>Author</b>	Francis Rumsey & Tim McCormick
<b>Publishing Year</b>	2014
<b>Title</b>	Sound and Recording
<b>Subtitle</b>	
<b>Edition</b>	7th Edition
<b>Publisher</b>	Focal Press
<b>ISBN</b>	9780415843379

<b>Course Material</b>	Book
<b>Author</b>	David Miles Huber & Robert E. Runstein
<b>Publishing Year</b>	2014
<b>Title</b>	Modern Recording Techniques
<b>Subtitle</b>	
<b>Edition</b>	8th Edition
<b>Publisher</b>	Focal Press
<b>ISBN</b>	9780240821573

<b>Course Material</b>	Book
<b>Author</b>	Andrew Hagerman
<b>Publishing Year</b>	2011
<b>Title</b>	Pro Tools LE 8 Ignite!
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Course Technology CENGAGE Learning
<b>ISBN</b>	9781598638868

<b>Course Material</b>	Book
<b>Author</b>	Digidesign and Frank D. Cook
<b>Publishing Year</b>	2009
<b>Title</b>	Pro Tools 101 Official Courseware, Version 8.0
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Course Technology CENGAGE Learning
<b>ISBN</b>	9781598638660

<b>Course Material</b>	Book
<b>Author</b>	Andy Farnell
<b>Publishing Year</b>	2010
<b>Title</b>	Designing Sound
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	MIT Press
<b>ISBN</b>	9780262014410

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## Notes

This module explores the role of computer-based digital audio technology tools and platforms the field of digital audio for applications within broadcast, multimedia content production, radio, recording and live performance.