

# CG087 Time-based Multimedia Assets

## Module Guide

### Module Team

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*Use email to contact us outside lecture/lab times*

### Module aims

The aim of the module is to extend your theoretical understanding and practical skills in generating time-based audio-visual assets for multimedia. It will also look at current developments in multimedia from the point of view of both technological changes and potential new uses (such as safety-critical systems, access for special needs users or virtual environments).

Specifically, the module aims:

1. To develop your ability to originate, synchronise and integrate time-based materials for use within a multimedia computer environment.
2. To provide you with an understanding of cross-media issues.
3. To provide you with a critical understanding of design techniques and technological issues relating to time-based assets.
4. To give you an appreciation of the potential of time-based assets as communicative and access tools.

### Learning Outcomes

Upon completion of this module you should be able to:

1. Originate time-based assets using computer technologies.
2. Integrate and synchronise time-based assets within a computer-controlled multimedia setting.
3. Make informed and effective use of time-based assets as a means of communication in a specific context.
4. Define and discuss cross-media issues and issues relating to the design and implementation of time-based assets.
5. Justify your design and technology decisions in the context of those issues and of issues of communication and access.

This module contributes to the following learning outcomes of the Multimedia Computing degree:

- A3: Technical, professional and business issues surrounding the development, operation and maintenance of multimedia computing systems;

- A4: Techniques and tools for the specification of requirements, analysis, design and implementation of multimedia systems;
- A5: Supporting and current techniques and technologies such as: video, sound, multimedia storage and retrieval;
- B2: Discuss and critically evaluate available development tools, methods, and technologies and associated user and professional issues;
- B3: Identify a problem and select and apply effective methods and tools for its solution;
- C3: Design and build high quality multimedia computing applications with appropriate multimedia components, networking and database support;
- C4: Use appropriate techniques and tools to support effective management of the development and operation of multimedia software systems;
- D1: Communicate information, ideas, problems and their solution, in both written and oral form;
- D2: Manage time and resources efficiently;
- D3: Work effectively both individually and as a member of a team;
- D4: Exercise initiative and personal responsibility;
- D5: Learn independently using a diverse range of resources;
- D6: Evaluate and criticise the learning experience.

## Teaching and Learning Methods

Teaching will involve lectures and discussion covering theoretical aspects. Practical aspects will be covered in lab sessions. You will also need to study additional materials as directed and complete practical exercises.

## Assessment

The assessment comprises one assignment that includes:

- a practical project testing learning outcomes 1, 2 & 3 and
- a written report testing learning outcomes 4 & 5.

You are strongly advised to start work on the assignment as soon as you can. You can get advice and formative feedback on practical work during labs. Full details will be included in the assignment brief. Make a note of the hand-in deadlines. On that date we must receive either your assessment work **or** a signed extension form to cover an extension previously agreed by the module team with your year tutor.

## Recommended reading

### Books

1. Kramer, G., ed. (1994) *Auditory Display*, Addison-Wesley: Reading, MA.
2. Alesso, Peter H., (2000) *e-Video: producing Internet video as Broadband Technologies*, Addison Wesley
3. Crowcroft, J., (1999) *Internetworking Multimedia*, Morgan Kaufmann
4. Pohlman, K., (2000) *Principles of Digital Audio*, McGraw-Hill
5. Tekalp (latest ed.) *Digital Video Processing*, Prentice Hall
6. Walkinson, J., (2000) *The Art of Digital Video*, Focal

7. Elsom-Cook, M., (2000) *Principles of Interactive Multimedia*, McGraw-Hill
8. Wishart, T., (1994) *Audible Design*, Orpheus the Pantomime

### Articles

1. Vickers, P. and Alty, J.L., *Using Music to Communicate Computing Information*. *Interacting with Computers*, 2002. **14**(5): p. 435-456.
2. Vickers, P. and Alty, J.L., *Musical Program Auralisation: A Structured Approach to Motif Design*. *Interacting with Computers*, 2002. **14**(5): p. 457-485.
3. Vickers, P. and Alty, J.L., *When Bugs Sing*. *Interacting with Computers*, 2002. **14**(6): p. 793-819.

### Additional Resources

1. Riley, R., *Audio Editing With Cool Edit*. PC Pub 2002

Registered students can access copies of handouts and other information on the unit through 'Blackboard' at <http://elearning.unn.ac.uk>. Lecture notes and worksheets will be available on Blackboard. Please note that the material on Blackboard is without the additional commentary, asides, and anecdotes provided by staff in the course of giving lectures.

You should find the following web sites useful:

[www.icad.org](http://www.icad.org) — the International Community for Auditory Display

[www.composerscientist.com](http://www.composerscientist.com) — Bob Sturm's sonification work.

[www.dcs.gla.ac.uk/~stephen](http://www.dcs.gla.ac.uk/~stephen) — Prof. Steve Brewster's auditory interaction work

## Draft schedule

*Please note, this schedule should not be treated as definitive and is subject to change*

Week	Lecture	Lab session	Assessment
1	Introduction to time-based assets <ul style="list-style-type: none"> <li>• Sound &amp; vision</li> <li>• Introduction to sound theory</li> <li>• Basic principles of sound physics</li> <li>• Psycho-acoustics</li> </ul>	Working with Cooledit & Cubasis	Assessment hand-out
2	Sound language <ul style="list-style-type: none"> <li>• Atmospheric sound</li> <li>• Sonic/musical grammars</li> <li>• Foley art and sound tracks</li> <li>• Sound in games</li> </ul>	None	
3	Sound as a communication/interaction medium <ul style="list-style-type: none"> <li>• Auditory display</li> <li>• Sonification, earcons, auditory icons</li> </ul>	Exploring sound	
4	Sound as a communication/interaction medium <ul style="list-style-type: none"> <li>• Program auralisation</li> </ul>	Exploring sonification	
5	Musical Instrument Digital Interface (MIDI) <ul style="list-style-type: none"> <li>• Definition &amp; history</li> <li>• Protocols</li> <li>• Input</li> <li>• Controllers and tone generators</li> <li>• Sequencers</li> </ul>	Working with Cubasis	
6	Combining MIDI and audio <ul style="list-style-type: none"> <li>• Sampling &amp; loops</li> <li>• Sequencing &amp; mixing</li> <li>• Video - digital Vs analogue (in theory and practice)</li> <li>• filming - video language, managing shooting</li> <li>• digitising, optimising, compression systems</li> <li>• synchronising sound to video</li> <li>• Compression and streaming for sound and video</li> </ul>	Working with Cubasis	
7-12	<ul style="list-style-type: none"> <li>• timebased control structures and environments, including simple virtual environments</li> <li>• current developments in timebased multimedia assets and computer-controlled</li> <li>• timebased applications</li> <li>• integrating and synchronising time-based assets</li> </ul>	TBA	
14			Assessment hand in