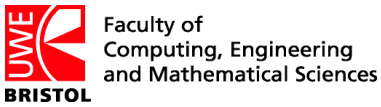

Faculty of Computing, Engineering & Mathematical Sciences

BSc (Hons) Multimedia Computing

Definitive Document – February 2004

Programme Specification

Section 1: Basic Data

Awarding institution/body	UWE
Teaching institution	UWE
Faculty responsible for programme	Computing, Engineering and Mathematical Sciences
Programme accredited by	N/A
Highest award title	BSc (Hons) Multimedia Computing
Default award title	
Interim award title	BSc Multimedia Computing, Dip HE Multimedia Computing, Cert HE Multimedia Computing
Modular Scheme title (if different)	Faculty of Computing, Engineering & Mathematical Sciences Modular Scheme
UCAS code (or other coding system if relevant)	
Relevant QAA subject benchmarking group(s)	Computing
On-going/valid until* (*delete as appropriate/insert end date)	
Valid from (insert date if appropriate)	1 September 2004

Authorised by… **Date:…**

Version Code 2

For coding purposes, a numerical sequence (1, 2, 3 etc.) should be used for successive programme specifications where 2 replaces 1, and where there are no concurrent specifications. A sequential decimal numbering (1.1; 1.2, 2.1; 2.2 etc) should be used where there are different and concurrent programme specifications

Section 2: Educational Aims of the Programme

The BSc (Hons) Multimedia Computing has the following general aims:

1. To enable students to embark upon professional careers by developing problem-solving and other transferable skills.

2. To develop study skills that will enable students to become independent, lifelong learners.

3. To prepare students for progressing to study for higher degrees in digital media.

4. To encourage the discerning use of reference material from a variety of sources.

The BSc (Hons) Multimedia Computing has the following specific aims:

1. To provide insight into the creation of Multimedia content ranging from web pages to feature length animations. This involves understanding the nature of the technology, the context within which it will be employed and how it might best be utilised.

2. To provide practical skills in the creation of Multimedia content for use in a variety of circumstances ranging from web pages to short length animations.

3. To develop skills in multimedia programming and to relate multimedia technologies to Internet and database technologies.

4. To relate media design to information processes, requirements and issues in the organisational environment.

5. To prepare students for careers in organisations that make significant use of a variety of forms of digital media to present information.

6. To develop the students' ability to make an immediate contribution to companies engaged in the development of applications incorporating significant multimedia content.

7. To develop the students' understanding of the importance of project planning in any domain, though with particular reference to the development of digital media artefacts.

A. Knowledge and Understanding

Section 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas: …

Knowledge and Understanding of:	Teaching/Learning Methods and Strategies	Assessment
1. The concepts, contexts and processes that inform the combination of textual and graphical forms of information in communication. 2. The principles of object-oriented programming and the fundamental details of one OO language. 3. Internet tools, Unix / Linux directory management and System descriptive notations. 4. The image and sound recording technologies underpinning digital media tools and techniques. 5. The use and impact of IT in the composition, recording and editing of music and audio. 6. The variety of application domains in which digital media techniques are deployed. 7. Factors and methods in Information content design.	On all modules, at all levels, students are encouraged to undertake independent reading to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge of the subject. The programme of study is designed to introduce the knowledge and understanding necessary to engage, from the beginning, in appreciating the range of opportunities for creating and manipulating images and sound as well as appreciating some of the contexts in which these may be applied. In year 1, the contexts in which these techniques may be used is introduced together with an introduction to the range of available media technologies. Detailed understanding of the technologies follows in year 2 together with the study of content itself and approaches to authoring multimedia content. At the same time careful consideration is given to assessing systems in terms of their usability. Year 3 sees coverage of 3D modelling. Multimedia management and Professional Issues all of which are based upon a general understanding of the area of multimedia. The individual application project and Dissertation allows students to pursue, in detail topics of their own choosing. Students choose 40 credits of options from a relatively small list of multimedia related modules.	Testing of the knowledge base is through: Assessed coursework (topics: 1, 6, 7, 11, 13); Assessed practical work (topics: 2, 3, 4, 5, 6, 8, 9, 10, 12, 14); Assessed Group coursework (topics: 3, 5); Presentation (topic: 13) Examination (topics: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14);

Knowledge and Understanding of:	Teaching/Learning Methods and Strategies	Assessment
8. How audio data and MIDI commands may be captured, stored, processed and output digitally. 9. Data structures, operations performed on them and languages for modelling them. 10. Approaches to the planning, design and implementation of multimedia application content. 11. The concept of usability and usability standards underpinning the design and evaluation of user interaction with computer systems. 12. The concepts of moving image production and the impact of technology on their production distribution and reception. 13. Professional and Ethical issues related to the use of IT and the wider policy implications that arise from them. 14. The principles of animation and the creation of 3D characters including appropriate lighting principles, shading algorithms and rendering techniques.	At level 1, knowledge and understanding of topics 1, 2, 3, 4, 6, 7 (textual and graphical forms of communication, object-oriented programming, fundamental image and sound recording technologies and application contexts) are introduced on a number of modules that explore the general concepts and issues. More in-depth knowledge and specific understanding follows in subsequent levels. At level 2 the deepening of the knowledge and understanding of multimedia continues with an expansion into more sophisticated and technically detailed areas. These include the use of computing in music and audio and the provision in Java for processing sound and music. In addition, modern technologies for processing moving images, the use of digital libraries and databases, assessment of systems from a user perspective and approaches to the authoring of systems which make use of these technologies are also covered. The development of specialized and more specific knowledge and understanding continues at level 3. Use of some standard sized modules provides fuller coverage of the major topic 3D Animation and also provides sufficient scope for a major piece of individual development work and for a literature review of a chosen topic. Use of some half-modules allows in-depth study of sharply focused advanced topics such as Multimedia Management, Professional, Legal and Commercial Issues and, as an option Text & Markup Languages, whilst use of some 20 credit options allows full coverage of broader topics such as Games Programming.	

B. Subject Specific Skills

Subject Specific Skills	Teaching/Learning Methods and Strategies	Assessment
Students will be able to: 1. Communicate effectively by appropriately expressing, interpreting and ordering information. 2. Design and implement simple OO programs using class diagrams and algorithm designs. 3. Use Unix / Linux and Internet tools to build systems. 4. Employ system descriptive notations. 5. Use a variety of multimedia technologies to create and edit images and sound recordings. 6. Generate and edit MIDI, sample and edit audio and integrate MIDI and audio. 7. Use appropriate tools and methods for the critical evaluation of application case materials.	Throughout the programme, the skills listed are developed through a combination of theoretical discussion, practical laboratory-based work, classroom based tutorial exercises and directed self-study. A number of the skills listed (1, 2, 3, 4, 5, 7) are introduced at level 1 and then developed at level 2 (8, 9, 10, 11). The general teaching / learning method is therefore to impart these practical skills by provision of the basic skills in year 1 then moving on to acquiring more advanced skills at level 2. Very specific skills (16, 17, and those offered in option modules) are introduced at level 3. These are underpinned by the more generalised capabilities (1, 5, 7) that are practiced throughout the levels in many of the modules that contribute to the award. In addition, some skills that are not solely based on those acquired in earlier modules are provided at levels 2 and 3 (6, 12, 14, 15). Some of these cover widely transferable skills; for example, project management and an ability to make balanced judgements within an ethical framework, whilst others introduce specialised skills such as the processing of audio tracks and the undertaking of user focused assessment of computer systems	The possession of these skills is demonstrated in a number of ways. The development of a practical piece of coursework (software) features significantly in the assessed work as does written work discussing key issues. Groupwork is also adopted in appropriate areas. An examination or, in one case a presentation, is used as the end of module assessment. The practical nature of the skills to be acquired means that particular modules (2, 3, 4, 6, 9, 10, 12, 13, 14, 15, 16 and 17) specifically address particular skills. The more generic skills (1, 5, 7, 8, and 11) are assessed across a number of modules. For example, the module '3D Modelling and Animation' requires the students to develop a short animation (7) as part of the assessment whilst the examination allows students to demonstrate that they have grasped the underlying concepts that inform the professional development of such an artifact. Skills such as use of appropriate multimedia artifacts (7) are fundamental to modern professional information presentation of any sort and thus contribute to the assessment of much, but not all, of the practical work produced.

Subject Specific Skills	Teaching/Learning Methods and Strategies	Assessment
8. Design information content for documents and the www. 9. Write Java programs to capture, store, process and output audio data and MIDI commands. 10. Presenting data in a variety of forms and implementing data models in RDBMS and XML as appropriate. 11. Plan, design and implement, using an authoring environment, multimedia application content resolving issues such as database connectivity, and import of media resources. 12. Apply user-centered design and undertake usability analysis. 13. Construct and document moving image sequences using digital video production equipment and editing software. 14. Apply principles of ethical practice to the development of appropriate policies in an IT context.		

Subject Specific Skills	Teaching/Learning Methods and Strategies	Assessment
15. Create lip-synched 3D animations using appropriate animation techniques, motion capture principles, shading algorithms and rendering methods. 16. Undertake a literature review of a specialist area including the writing of a critical review of the subject. 17. Specify the requirements for a multimedia-focused application and undertake its design and implementation using appropriate software tools and techniques.		

C. Cognitive (Intellectual) Skills

Cognitive (Intellectual) Skills	**Teaching/Learning Methods and Strategies**	**Assessment**
1. Critical Thinking 2. Analysis 3. Synthesis of different types of information 4. Evaluation 5. Problem Solving 6. Appreciate problem contexts 7. Balance conflicting objectives	At all levels students are required to bring together knowledge and skills acquired in several modules and hence determine new ways of working. As the student progresses, the need to synthesise (3) ever-greater volumes of information and approaches into a coherent approach is developed and consequently so is their critical thinking (1). At level 1 Analysis (2), Evaluation (4) and Problem Solving (5) are developed on small-scale problems in various programming activities in a number of modules. Here the focus is on understanding the problem and then solving it free from the environmental implications of real-world problems and without the need to examine alternatives and to balance conflicting goals. At level 2 there is a move away from small-scale relatively trivial problems to the consideration of larger scale more complex systems. With this comes the need to evaluate (4) alternative methods and designs and to balance conflicting objectives (7). Level 3 sees the move to yet more sophisticated techniques and more complex examples and with it the need to appreciate problem contexts (6) is developed as well as striking the right balance when facing conflicting objectives (7).	Programming of complex software requires demonstration of all of the intellectual skills. At level 1 the focus in programming coursework assessment, is on the skills of Analysis (2), Evaluation (4) and Problem Solving (5). At levels 2 and 3 this branches out to include all the remaining skills. Many of the coursework assessments and exam papers include elements of programming work. Similarly, consideration of the uses of information within information systems for communication also requires demonstration of all of the intellectual skills and these too initially focus on the skills of Analysis (2), Evaluation (4) and Problem Solving (5) moving on to the rest at levels 2 and 3. Independent reading is used to enable students to focus on their own areas of interest and in the process assess skills 1-4 in the submitted reports, essays and exam answers. Design-work, even when not implemented in a programming language, requires demonstration of skills 1, 2, 5, 6, 7 and a number of coursework assessments and exam questions are devoted to such work. Finally, all of the examinations assess skills 1-4 whilst skills 5-7 are covered in many exams.

D. Key (Transferable) Skills

Key (Transferable) Skills	Teaching/Learning Methods and Strategies	Assessment
1. Communication skills**:** to communicate orally or in writing, including, for instance, the results of technical investigations, to peers and/or to "problem owners".	1. Skill one is developed through a variety of methods and strategies including the following: ♦ Students participate in electronic conferences, workshops, and groupwork sessions. ♦ Students participate in discussion tutorials ♦ Students present research topic findings in tutorials ♦ Students participate in individual tutorials	1. Skill one is demonstrated mainly by examination, but also by poster presentation. 2. Skills two to eight are demonstrated by a number of similar instruments including the following: ♦ Individual and group projects ♦ Practical assignments ♦ Portfolio of exercises
2. Self-management skills: to manage one's own time; to meet deadlines; to work with others having gained insights into the problems of team-based software development.	2. Skill two is developed through a variety of methods and strategies including the following: ♦ Students conduct self-managed practical work ♦ Students participate in practically-oriented tutorial laboratory sessions ♦ Students work through practical work-sheets in teams ♦ Students practice design and programming ♦ Students participate in electronic conferencing tutorials ♦ Students participate in electronic groupworking	
3. IT skills in context: to use software tools in the context of application development.	3. Skill three is developed through a variety of methods and strategies including the following: ♦ Students conduct self-managed practical work ♦ Students participate in experimental investigation tutorials ♦ Students work through practical work-sheets in teams ♦ Students make use of online teaching materials ♦ Students are encouraged to practice programming to extend their skills	

Key (Transferable) Skills	Teaching/Learning Methods and Strategies	Assessment
4. Logical reasoning skills: To undertake analysis and interpretation of information in the context of Artificial Intelligence.	4. Skill four is developed through a variety of methods and strategies including the following: ♦ Students develop problem-solving programs ♦ Case-Studies are used to explore design issues with students ♦ Students practice design and programming ♦ Students sketch designs of larger systems	
5. Problem formulation: To express problems in appropriate notations.	5. Skill five is developed through a variety of methods and strategies including the following: ♦ Students develop problem solving programs ♦ Students practice design and programming in a number of different languages ♦ Students sketch designs of larger systems	
6. Progression to independent learning: To gain experience of, and to develop skills in, learning independently of structured class work. For example, to develop the ability to use on-line facilities to further self-study.	6. Skill six is developed through a variety of methods and strategies including the following: ♦ Students are encouraged to practice programming to extend their skills ♦ Students are encouraged to research relevant topics ♦ Students are encouraged to use online facilities to discover information	
7. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.	7. Skill seven is developed through a variety of methods and strategies including the following: ♦ Students are encouraged to access online material	
8. Information access: to understand basic techniques for structuring and thereby accessing information.	8. Skill eight is developed through a variety of methods and strategies including: ♦ Participating in the modules in the programme as this is a primary focus for several of them. ♦ Students contribute to electronic conferencing sessions having researched a topic and formulated an appropriate means of communicating the results to peers.	

Section 4: Programme Structure

Note: This structure is indicative and subject to change

BSc (Hons) Multimedia Computing

Either Computing Project UFCE3B-40-3 **Or** IS Dissertation UFIE8Y-20-3 **and** Application Development Project NEW MODULE UFCEKW-20-3	Professional, Ethical and Policy Issues NEW MODULE UFIEKJ-20-3	3D Modelling and Animation NEW MODULE UFCEKT-20-3	Options - choose 40 credits from: Text and Markup Languages (New) UFIEKK-10-3 Digital Stories (New) UFIEKV-10-3 Interface Engineering UFCE4T-10-3 Graphics Programming UFCE4F-20-2 Games Programming (New) UFCEKU-20-3	

Industrial Placement Year

Content Design NEW MODULE UFIEKE-20-2	Java for Sound and Music NEW MODULE UFCEKX-20-2	Data Schemas and Applications NEW MODULE UFIEKG-20-2	Multimedia Authoring NEW MODULE UFCEKS-20-2	Human-Computer Interaction UFIE9A-20-2	Moving Image Technology NEW MODULE UFIEK3-20-2
Informing and Communicating NEW MODULE UFIEKD-20-1	Intro to Program Development UFCE46-20-1 **Or** ProgramDevelopment UFCE45-20-1	Systems Development UFCE47-20-1	Media Technologies NEW MODULE UFCEKR-20-1	Computing, Audio and Music NEW MODULE UFIEK4-20-2	Information Systems Application Contexts UFIE8Q-20-1

Core modules Option modules

PLEASE NOTE: REFER TO THE FACULTY ON-LINE INFORMATION SYSTEM FOR UP-TO-DATE STRUCTURE INFORMATION
http://www.cems.uwe.ac.uk/exist/index.xql

Section 5: Entry Requirements

The university's minimum requirements for entry to a degree apply to this programme. In addition entrants are required to have Mathematics at GCSE Grade C or equivalent..

Section 6: Assessment Regulations

The university's Modular Assessment Regulations apply to this programme.

Section 7: Student Learning: Distinctive Features and Support

Within the Faculty of Computing Engineering and Mathematical Sciences, student learning is supported in the following ways:

Class Activities The mode of delivery of a module is determined by its Module Leader, and typically involves a combination of one or more lectures, tutorials, 'lectorials', laboratory classes, group activities and individual project work.

Academic Support Academic advice and support is the responsibility of the staff delivering the module in question. Staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on matters relating to the material being taught and on its assessment.

Pastoral Care The faculty offers pastoral care through its Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis and by appointment. All students on the same route are allocated to the same Adviser, who is trained to provide advice on matters commonly of concern, including regulatory and other matters. The Adviser will advise the student to seek advice from appropriate professional services including the university's Centre for Student Affairs or from members of academic staff.

Progression to Independent Study

Many modules require students to carry out independent study, such as research for projects and assignments, and a full range of facilities are available to help students with these. Accordingly, the philosophy is to offer students both guided support and opportunities for independent study. Guided support, mainly in the form of timetabled sessions, which students are expected to attend.

The progression to independent study is also assisted by the nature of the support offered in individual modules. Typically, module leaders will provide a plan for the module indicating the activities to be carried out and the forms of learning to be undertaken during the delivery of the module, with a view to encouraging students to plan ahead and to take responsibility for managing their time and resources.

Computing Facilities The Faculty offers a specialised computing facility along side the general University provision. There are nine general PC computing laboratories of 20 plus seats all running Windows2000, along with four Unix based and 10 specialist computing laboratories. The specialist laboratories are equipped with software for CEMS students including Software Tools and Development Environments.

One of the most popular areas within the Faculty is the Open Access laboratory. This area is never time-tabled and gives students the opportunity to access machines at all times during opening hours. This is a mixed environment consisting of PCs and Unix workstations.

Due to the extensive and specialist nature of the computing facility provided within the Faculty there is a need for user support. The Faculty provides a user support Helpdesk that provides first line support to users. It is uniquely supported by both permanent staff and students who are in their second or final year of study and are employed on a part time basis. The helpdesk is open from 08.30 hrs until 20.00hrs every day. The general laboratories are available to students up until midnight, seven days per week.

Section 8 Reference Points/Benchmarks

The QAA Subject Benchmark Statement for Computing was published in 2000, and is applicable to this proposal. The design team has considered it in drawing up the structure of the proposed half-degree, and is of the view that the proposal falls clearly within the scope of the benchmarks, as regards curriculum, teaching and learning, and the benchmarking standards themselves.

The benchmarks (paragraph 2.1) identify a range of types of degrees in computing. At one extreme is a programme that "*covers a wide range of topics spanning the entire area of computing". A*t the other programmes that "*take one very specific aspect of computing and covers it in great depth"*. This proposal is closer to the second of these extremes.

The benchmarks recognise (paragraph 3.3) that diversity of provision is to be encouraged, and hence degrees covering relatively new specialist areas have an important place in the provision. Nevertheless, there are inevitably constraints and conflicting demands between coverage of the new topics and those of more traditionally fundamental topics. The design team has faced these constraints as part of the course design as set out in the benchmarks (paragraph 3.1), and it believes that it has successfully met them all.

The benchmarks also contain (section 5) statements of the standards expected of graduates at both modal and threshold levels. The team is of the view that graduates of the proposed programme will be able to meet the required standards.

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in the module specifications.

The programme will be delivered in accordance with the faculty's Teaching, Learning and Assessment Strategy which has in turn been informed by the university's Learning & Teaching Strategy