Faculty of
Computing, Engineering
and Mathematical Sciences

UWE
BRISTOL

BSc (Hons) Games Technology

Definitive Documentation – January 2006

Part 1: Programme Specification

Part 2: Module Specifications

Part 3: Contextual Documentation

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Part 1: Programme Specification

Programme Specification

Section 1: Basic Data

Awarding institution/body	University of the West of England
Teaching institution	University of the West of England
Faculty responsible for programme	Computing, Engineering and Mathematical Sciences
Programme accredited by	N/A
Highest award title	BSc (Hons) Games Technology
Default award title	
Interim award title	BSc Games Technology Diploma of Higher Education, Certificate of Higher Education
Modular Scheme title (if different)	
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)	1st September 2006

Authorised by… **Date:…**

Version Code

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) Games Technology 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) Games Technology has the following specific aims:

1. To provide insight into computer game design and implementation. This involves understanding the creative potential that exists between the artistic, narrative and technological elements that constitute electronic games and the exploration of the cultural and technological contexts out of which they arise.

2. To provide practical skills in the creation of computer games and related digital media content in a variety of deployment environments including dedicated consoles, desktop computers and mobile devices.

3. To develop the students' ability to make innovative and robust contributions to companies engaged in the development of computer games entertainment and related digital media.

4. To develop the students' understanding of the importance of project management within computing, with particular reference to the development of computer games and related digital media artefacts.

Section 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, intellectual skills, subject-specific skills and transferable skills., as shown below.

A. Knowledge and Understanding

Knowledge and Understanding of:	***Teaching/Learning Methods and Strategies***	***Assessment***
Students of this programme will gain knowledge and understanding of: 1. Historical and cultural perspectives of computer games and related supporting technologies. 2. Principles and applications of games design, interactivity and user involvement. 3. Games programming design concepts, methods, notations and algorithms. 4. Hardware components and supporting software technologies required for the production and deployment of contemporary game environments. 5. The role of artificial intelligence (AI) within computer games and associated algorithms and programming techniques. 6. Professional issues surrounding the development and deployment of computer games within an international market place	Throughout the programme there is a strong emphasis on coupling theory with practice. Thus most of the modules include lab or practical classroom work and knowledge and understanding is developed by giving students the opportunity to implement examples of the concepts listed on the left. Knowledge development in the areas listed pervades the entire programme; nonetheless, specific examples of places where these outcomes can be identified are listed below: Acquisition of 1 is through core module Games – Development & Evolution (UFCEQA-20-1). Acquisition of 2 is through Playing Games (UFIEQD-20-2) and expanded in Commercial Games Development (UFCEQE-20-3) with further consolidation via Computing Project (UFCE3B-40-3). Acquisition of 3 is introductory and generic within Introduction to Programme Development (UFCE46-20-1) and Software Development for Engineers (UFEE7A-20-1), elementary but specific through Games – Development & Evolution (UFCEQA-20-1) with further depth from Play & Games (UFIEQD-20-2) and application provided within Games Programming (UCEKU-20-3) and Graphics Programming (UFCE4F-20-2) and extended via Commercial Games Development (UFCEQE-20-3.	The outcomes are assessed in core modules through a variety of methods, including exams and coursework assignments.

	Acquisition of 4 is through 3D Modelling & Animation (UFCEKT-20-3) and Multimedia Authoring (UFCEKS-20-2) Acquisition of 5 is through Computational Intelligence (UFCE3H-20-1) and extended and applied within AI for Games (UFCEQC-20-2). Acquisition of 6 is through UFIEKJ-20-3.	

B. Intellectual Skills

Intellectual Skills	*Teaching/Learning Methods and Strategies*	*Assessment*
Students of this programme will develop their intellectual skills in areas of: 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 8. Creative and Interpretive Thinking	Programmes in the general areas of computing readily lend themselves to the development of the cognitive skills listed on the left. This particular programme has as a central focus the development of design and implementation skills relating to Computer Games. Thus throughout the programme, students are required to consider games scenarios and to devise solutions that meet the constraints and requirements of those scenarios. At level 1, the contexts presented are well-bounded and usually defined by the tutor in charge of the module in which it occurs. As the student moves through the programme, they are required to be increasingly self-directed in terms of the scenarios that are devised. The problems presented to them increasingly have conflicting requirements, the resolution of which they need to evaluate and justify. At all levels students are required to synthesise (3) the knowledge and skills acquired in several modules and determine new ways of working. The students' development of the necessary coherent strategies to deal with these issues also develops their ability to think critically (1). At level 1 Analysis (2), Evaluation (4) and Problem Solving (5) are developed through small-scale programming activities and problems on a number of modules. The focus is on a conceptual understanding of a problem and its practical solution free from the complications and constraints of a large scale products within a commercial environment. This also allows students to address these issues without the need to examine alternatives and to balance conflicting goals. At level 2 there is a move away from small-scale problems to the design of larger 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 specific application examples and with it the ability to appreciate problem contexts (6) is developed as well as the skills to strike an appropriate balance when facing conflicting objectives (7).	Games development requires demonstration of all of the intellectual skills. At level 1 the focus in programming coursework assessment, undertaken in a number of modules, is on the skills of Analysis (2), Evaluation (4) and Problem Solving (5). At levels 2 and 3 the emphasis grows to include all the remaining skills. Many of the coursework assessments and exam papers include elements of programming work. Independent reading is used to enable students to focus on their own areas of interest and in the process asses 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.

C. Subject, Professional and Practical Skills

Subject/Professional/Practical Skills	***Teaching/Learning Methods and Strategies***	***Assessment***
Students will be able to: 1. Write games programs that conform to designs 2. Create high-level and low-level game designs that correspond to stated requirements 3. Evaluate games comparatively. 4. Apply appropriate AI techniques to Games development 5. Perform adequate tests and analysis of user involvement whilst developing programs 6. Know how to utilise existing components and frameworks to build new applications 7. Build mobile/distributed gaming systems 9. Employ a range of tools and notations to support the activities listed above: e.g. , RAD environments, , Maya, C, C++, Java etc..	Throughout the program, the skills listed are developed through a combination of theoretical discussion, practical laboratory based work, classroom based tutorial exercises and self-directed study. Many of the skills listed (1,2,3,5,6,8) are introduced at level 1 and then drawn into sharper focus at levels 2 and 3. Therefore the general teaching/learning method is to impart these practical/professional skills by a process of moving from an overview of each skill set towards the application and integration these skills at increasingly higher level. Some very specific skills (4, 7) are introduced at level 3. These are underpinned by the more generalised capabilities (1, 8) that are practised throughout the levels in most of the modules that contribute to the award.	The possession of these skills is demonstrated both by the development of a practical piece of coursework (software) and by examination. The practical nature of the skills to be acquired means that some are specifically addressed by particular modules (3, 4, 6, 7). The more generic skills (1,2,5,8) are assessed across the modules. Skills such as conformance to design and requirements (1, 2) and the construction of adequate testing strategies (5) are fundamental to professional software development of any sort and thus contribute to the assessment of all the practical work produced.

D. Transferable Skills and Other Attributes

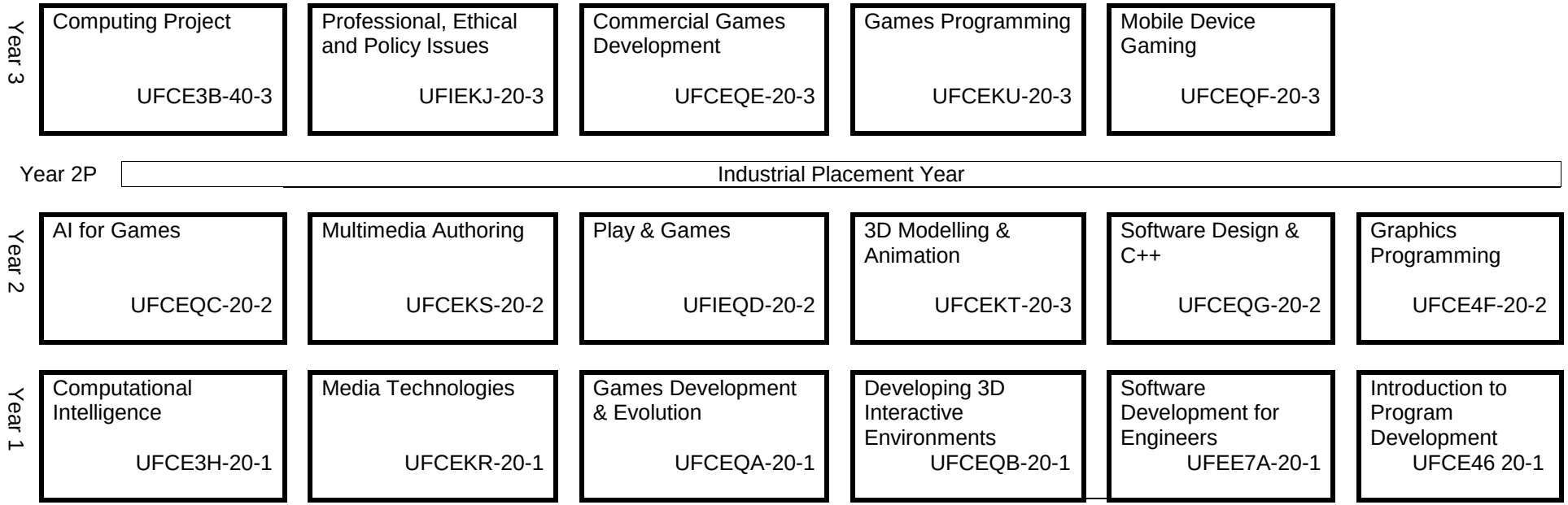
Transferable skills are developed throughout the programme by the means listed below. These skills are acquired at increasing levels of sophistication as the student moves through the programme. Thus at level 1 a student is required to engage in activities that are closed, highly structured and carefully directed; at level 2 tasks are less prescriptive and increasingly interdependent between students, groups and tutors; at level 3 the student is expected to undertake open tasks requiring skills in self-management and independent learning. The detail of this progression is given in the table below.

Transferable Skills and Other Attributes	***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 maintain laboratory log books • 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	These skills are demonstrated in a variety of contexts including • examination • poster presentation. individual and group projects • Practical assignments • Portfolio of exercises In addition skill two is assessed by both peers and tutors.
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 systems 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	
3. IT Skills in Context (to use software in the context of problem-solving investigations, and to interpret findings)	3. Skill three is developed widely throughout the programme.	

4. Problem formulation: To express problems in appropriate notations.	4. Skill four is developed through a variety of methods and strategies including the following: • Students develop problem solving programs • Students practice design and programming • Students sketch designs of larger systems	
5. 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.	5. Skill five is developed through a variety of methods and strategies including the following: • Students practice programming to extend their skills • Students develop problem-solving programs • Students are encouraged to research relevant topics	
6. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.	6. Skill six is developed through a variety of methods and strategies including the following: • Students are encouraged to access appropriate online material	
7. Working with Others**:** to be able to work as a member of a team; to be aware of the benefits and problems which teamwork can bring.	7. Skill seven is developed through a variety of methods and strategies including the following: • Students develop a database system in laboratory sessions	

Section 4: Programme Structure

Programme Structure for BSc (Hons) Games Technology For September 2006



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.

Section 6: Assessment Regulations

The Modular Assessment Regulations apply to this programme

Section 7: Student Learning: Distinctive Features and Support

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. Modules on the Foundation Programme which require laboratory classes are commonly delivered by means of a combination of lecture and practicals or tutorials. Other modules are often delivered by means of 'lectorials', classes for groups of 20-30 students with no distinction between lectures and tutorials, and this has proved to be an effective mechanism for modules especially at Level 1.

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's offers pastoral care through its Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis or 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, when necessary, advise the student to seek advice to from other 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 at all sites to help students with these. The philosophy is accordingly to offer students both guided support and opportunities for independent study. Guided support, mainly in the form of timetabled sessions, takes the form of lectures, tutorials, seminars and practical laboratory sessions. Students are expected to attend all sessions on their timetable, and this is especially important because of the high content of practical work in the programme.

The progression to independent study will also be 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 provisions. There are nine general PC computing laboratories of 20 plus seats all running Windows XP Pro, along with four Unix based laboratory and 10 specialist computing labs. The specialist laboratories are equipped with the specific software for CEMS students; including Software Design Tools development environment, CAD, finite element analysis, mathematics and statistics packages to support the taught program. The specialist Computing laboratories are designed to target the discipline taught in that area. Amongst these, is the Computer Systems Architecture and Linux laboratory. The Unix labs offer the latest web development and programming tools. Commercial games development hardware and associated software framework.

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 computing facility provided within the Faculty, and the specialist nature of this facility, the need for user support is necessary. The Faculty provides a user support Helpdesk. The Helpdesk provides fist line support to the user base, uniquely supported by both permanent staff and students that are in their second or final year of study (employed on a part time basis) until 20.00hrs every day. These general purpose and specialist laboratories are available to students up until midnight, seven days per week.

Careers Support The faculty works with the Career Development Unit to ensure that students develop their employability to a level that will enable them to compete effectively for jobs in the graduate labour market. Careers support can take a range of forms including timetabled workshops and individual guidance, and can supplement the nurturing of key transferable skills through teaching and learning within the curriculum.

Placement Opportunity This programme allows students to spend their third year with a placement organisation before returning to university to complete their final year of study. The placement year is a period of paid employment which offers an excellent opportunity to apply the concepts learned during the first two years in a commercial/industrial context. Whilst we cannot guarantee that a suitable placement will be found, the faculty has a placements office to provide the students with a reliable and knowledgeable contact point for any issues or queries. The placement office keeps a list of companies who have taken placement students in the past and can provide help with writing job applications. Comprehensive preparatory material and continuing support is also made available through this office. The module specification lists some of this support in more detail. A senior academic is attached as placements co-ordinator to provide leadership and support.

Whilst on placement, each student is assigned a placements tutor from the university as well as an industrial supervisor. Each student is visited at their workplace with their industrial supervisor to ensure that the activities within the placement are suitable to meet the required learning outcomes. Placements are often a rich source of topics to be pursued in a final year project and/or permanent job offers on graduation.

Section 8 Reference Points/Benchmarks

In designing this programme, the faculty has drawn upon the following external reference points:

1. The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland
2. The QAA Benchmark Statement for Computing
3. UWE's Learning & Teaching Strategy

The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland describes the attributes and skills expected of Honours graduates. It is our view that the learning outcomes of this programme are fully consistent with the qualification descriptor in the Framework, and hence that graduates will be able to demonstrate that they meet the expectations of the Framework.

The QAA Subject Benchmark Statement for Computing

The QAA Subject Benchmark Statement for Computing was published in 2000 and is applicable to this proposal. The proposal falls clearly within the scope of the Computing benchmark, in that it is precisely concerned with "the understanding, design and exploitation of computation and computer technology" (Benchmark Statement, p.1 section 1) TheGames Technology curriculum falls within the cognate area identified in the document and draws from the topics listed at Annex A of the document, particularly Artificial Intelligence, Graphics and Sound and Multimedia. In terms of the Statement's high-level characterisation of Computing, the programme has at its heart ***practice*** and ***software*** though ***communication and interaction, theory*** and ***hardware*** are important and significant strands.

Great attention has been paid in the design of this programme to create a teaching and learning programme which will foster a good and effective mix of the cognitive, practical and generic (transferable) skills discussed in 2.2 in the Benchmark Statement. The programme matches well with the course design principles listed in 3.1 of the Statement.

The Statement also contains (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.

UWE's Learning & Teaching Strategy has informed the faculty's policy for the delivery of its programmes, whose main features are described in section 7.