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PROGRAMME SPECIFICATION

Course Record Information	
Name and level of final & intermediate Awards	B.Sc. (Honours) in Computer Games Development B.Sc. (Honours) in Computer Games Development (Sandwich) Diploma in Higher Education (Dip HE) in Computer Games Development Certificate in Higher Education (Cert. HE) in Computer Games Development
Awarding Body	University of Westminster
Location of Delivery	Central London (Cavendish) site
Mode of Study	3 years full-time or 4 years full-time sandwich or 4 years full-time with foundation
UW Course Code	U09FUCGD U09FFCGD
JACS Code	G490
UCAS Code	GG46 GG4P (Foundation)
QAA Subject Benchmarking Group	Computing
Professional Body Accreditation	Skillset Media Academy Network
Date of initial course approval/last review	2009
Date of Programme Specification	2009

Admissions Requirements

Current University Requirements:
BSc (Honours) Computer Games Development: 240 UCAS points
BSc (Honours) Computer Games Development with Foundation: 160 UCAS points

Aims of the course

This course covers all aspects of the computer games development process, from game programming to game design and production, with emphasis on the technical skills for the new era of game programmers. To support this aim the course is structured around a technical core but offers students modules that explore related areas that are focused on production, design and modelling. Based on that two specialisations have been developed. The programming specialisation and the animation/modelling specialisation. At levels 5 and 6 students will study all the required programming needed in the games industry, but they can choose to advance their knowledge in programming by taking optional modules such as computer games and AI, or advance their animation techniques by taking modules such as 3D games modelling and advance animation techniques with motion capture.

Upon completion of the course students will be expected to gain a programming role in the games industry. However, since the games industry relies on the work of multidisciplinary groups a range of design, production and management modules is involved in the course structure. As an interdisciplinary course of programming and design, career opportunities such as game programmers and designers can be gained in small start-ups and major multinational game companies. The needs of the industry are at the heart of this course, and there are a number of talks from key industry organisations as well as visits to computer shows and fairs.

The course aims:

- To give students an advanced understanding of, and competence with, the theories, concepts, technologies and techniques of Computer Games development.

- To produce graduates possessing awareness, knowledge and practical skills in the field of Computer Games enabling them to follow a programme of study that will offer relevant specialisation and career options.

- To develop students' professional attitudes, interpersonal and entrepreneurial skills which are required by a practitioner in the industry.

- To provide students with critical and evaluative perspectives related to Computer Games development and develop students' capacity for independent and self-reflective learning, ensuring their future contribution to research and development.

Employment and Further Study Opportunities

The Course has been designed to enable graduates to possess the practical skills and knowledge to develop a range of careers within the **games industry** and **entertainment**. Programming, maths and games physics, games level design, 3D modelling, algorithms for real-time graphics, games production and simulation techniques are highly suited to computer games and this course aims to provide students with the necessary expertise for the development of such systems. Furthermore, our students participate in **international game competitions** like dare to be digital and are panel members in game conferences.

Job titles include game programmers, game designers/level game designers, and testers. To get a job in the games industry you need to get a good Honours degree. You also need to develop a 'portfolio', i.e. games/demos of what you can do. This applies both to programmers and designers.

Today's organisations need graduates with both good degrees and skills relevant to the workplace, i.e., employability skills. The University of Westminster is committed to developing employable graduates by ensuring that:

- Career development skills are embedded in all courses
- Opportunities for part-time work, placements and work-related learning activities are widely available to students
- Staff continue to widen and strengthen the University's links with employers in all sectors, involving them in curriculum design and encouraging their participation in other aspects of the University's career education and guidance provision
- Staff are provided with up-to-date data on labour market trends and employers' requirements which will inform the service delivered to students.

Furthermore, all students undertake a major games-related project in their final year that will extend and enhance their technical skills as well as their time and project management skills.

Learning Outcomes for Level 3 (Foundation year)

Learning outcomes are statements on what successful students have achieved as the result of learning. They threshold statements of achievement and are linked to the knowledge, understanding and skills that a student will have gained on successfully completing a course.

Knowledge and Understanding

Upon successful completion of the course, students will be able to:-

1. Understand basic algebraic and arithmetic properties,
2. Write structured programs,
3. Use a range of software tools in the computing environment;
4. Model well defined problems, mathematically and computationally;
5. Describe, at various levels, the function of a computer and its components,
6. Apply appropriate communication skills in an academic environment,
7. Make an informed choice of degree option from the alternatives presented.

Specific Skills

Upon successful completion of the course, students will be able to:-

1. Solve mathematical problems involving basic numeracy, algebra, trigonometry and coordinate geometry; number systems, Boolean algebra, logic circuits, sets and relations,
2. Demonstrate skills in the use of operating systems and a range of application packages,
3. Specify, select and evaluate hardware to implement a specified computer system,
4. Apply theory and practice to the analysis, design, implementation and testing of software.

Key Transferable skills

Upon successful completion of the course, students will be able to:-

1. Produce structured written work in a variety of formats;
2. Make oral presentations and participate in discussions and seminars;
3. Use a range of learning resources to support their work;
4. Manage self directed learning with support;
5. Work effectively in a group environment,
6. Apply time management techniques to organise effectively study time and resources,
7. Apply note taking skills in order to develop more useful revision resources.

Learning Outcomes for Level 4 (1st year of the course)

Learning outcomes are statements on what successful students have achieved as the result of learning. They threshold statements of achievement and are linked to the knowledge, understanding and skills that a student will have gained on successfully completing a course.

Knowledge and Understanding (Level 4)

Year 1 modules provide an underpinning of the subject area. You are introduced to computer programming concepts, the hardware and software components of computer games, and the maths which are the foundations on which computer games are developed. These subjects are studied alongside the introduction to games development and creative games design and playability. The principal language of the first year is C++.

By the end of level 4 students should be able to :

- Demonstrate knowledge of the issues related to interactive games design, games art and programming.
- Understand the use of basic computer software enabling simple games prototypes and artwork to be created.
- Be able to program procedurally and understand the basics of object oriented programming.
- Apply problem solving methodology to design and implement a solution to simple interactive computer games problems.
- Demonstrate knowledge of mathematical techniques associated with games programming.
- Explain the structure and fundamental operations of computers.

Subject specific and practical skills (Level 4)

By the end of level 4 students should be able to:

- Understand of the rationale behind marking and assessment and of regulations governing their degree.
- Describe the individual fields of Computer Science.
- Demonstrate effective and accurate use of appropriate subject terminology (all modules)

Transferable skills (Level 4)

By the end of level 4 students should be able to:

- Retrieve, analyse and summarise information and ideas from a range of print and electronic material.
- Communicate ideas and information by oral, written, visual and electronic means.
- Work and learn independently, exercising initiative and taking personal responsibility.
- Demonstrate an understanding of critical thinking through the ability to apply it through given test cases.
- Manage time and resources.
- Recognise the implications of working in a group.

Learning Outcomes for Level 5 (2nd year of the course)

Knowledge and Understanding (Level 5)

In Year 2 you continue to develop your programming skills by implementing prototypes of 2D games engines using C++. You are also introduced to 3D graphics programming, real-time graphics and game platforms. The maths becomes more advanced and games physics required in the games programming are introduced. Other subjects covered include professional practice, a mini games proposal and prototype which can be used as part of your games portfolio if you decide to undertake the placement year, algorithms and data structures, and introduction to 3D modelling. There are also options in the second year that allow you to specialise and continue in your final year.

By the end of level 5 students should be able to:

- Demonstrate a development of the knowledge gained at level one.
- Research, analyse and critically understand the factors responsible for “good” games playability, design and longevity.
- Practically apply these concepts, issues and methods in the production of games prototypes.
- Demonstrate knowledge of object oriented methodologies in the implementation of 2D games by developing their own 2D game engine using C++.
- Demonstrate knowledge of 3D graphics programming.
- Demonstrate knowledge of the mathematics and the physics underlying the implementation of the physics laws required in games programming.
- Demonstrate knowledge of the execution mechanism and processing pipelines used in gaming hardware and real-time graphics.
- Prepare the students for work placement in the fields of games programming, animation, character design, visualisation, and other related fields.

Subject specific and practical skills (Level 5)

By the end of level 5 students should be able to:

- To assess the requirements and solutions for a given computer games task.
- To collect and analyse information though the application if relevant enquiry methods.
- Work in groups and make direct contact with industry through portfolio drop-offs, interviews with art directors or job applications.

Transferable skills (Level 5)

By the end of level 5 students should be able to:

Learning Outcomes for Level 6 (3rd year of the course)

Knowledge and Understanding (Level 6)

In Year 3 you focus on advanced maths for programming, networking game design, and advanced programming. You have the chance to develop a large scale practical project which will be part of your games portfolio.

By the end of level 6 students should be able to:

- Demonstrate a development of the knowledge gained at level two and practically apply these skills to the development of more advanced game programs and/or advanced animation techniques.
- Demonstrate a good working knowledge of the work-flow, structure and co-ordination involved in the production of complex games problems.
- Demonstrate an understanding and knowledge of the opportunities and markets for future employment in the games and related industries.

Subject specific and practical skills (Level 6)

By the end of level 6 students should be able to:

- To reflect critically on the relationship between theory and practice.
- Understand the variety of roles and responsibilities held by the principle team members of a computer games project.
- To design schedules and strategies to ensure the smooth running of a complex project.
- Self-define a research topic in the area of computer games to work on.
- Produce a well-structured and coherent report of an extended piece of work and be able to defend it.

Transferable skills (Level 6)

By the end of level 6 students should be able to:

- Possess a basic understanding of business strategies and practices that relate to freelance work.
- Possess key skills in career management and understanding of strategies for self-promotion.

Teaching, Learning and Assessment Methods

The delivery of modules within the BSc (Honours) in Computer Games Development Degree is through lectures, tutorials, seminars, workshops and case studies.

The BSc (Honours) in Computer Games Development course has two points of focus, vocational skills and academic knowledge. It is important that students are able to develop vocational skills which are both subject specific and more generic and transferable to enable graduates to confidently enter the workplace. This skill development however needs to be built upon an academic framework of concept, theory and technique, providing for a more in-depth and rounded educational experience. This will provide more opportunities for career progression and choices as well as support for continuous personal development.

Level 3
Learning and course delivery
The Foundation course has been structured to accept students from a wide variety of learning backgrounds. Successful teaching methods have been developed over the years for teaching the Foundation. That is, lectures/seminars including exercises plus regular practical laboratory sessions where relevant. Often these sessions also provide useful opportunities for students to ask about other aspects of regulations and procedures they may not understand. These are further supplemented, in many cases, by the use of the Blackboard virtual learning environment. This system is used to disseminate additional material and in tutorial tests.

Assessment
Various methods are used to assess different aspects of student's performance. These assessment patterns are similar to those used in higher years (**Level 4, 5 and 6**). Modules all have In-Course Assessment (ICA), which consists of a mixture of regular tests, laboratory work, log books, written assignments, presentations, reports and individualised homework exercises. Modules all have at least two formal aspects of assessment (e.g. examination and coursework).

Level 4
Core knowledge and understanding are promoted via lectures, student centred tutorials, group work. Assessment method: Phase tests, normally consisting of multiple choice and short answer questions; coursework; group presentations; exams.

Specific skills are promoted via demonstrations and tutorial activities in the labs, guided independent study (GIS). Assessment method: Phase tests, normally consisting of multiple choice and short answer questions; coursework; exams.

Key skills are promoted via student centred activities in tutorials; these include group discussions, group work, construction of a

Specific skills are promoted via tutorial activities in the labs, problem based scenarios, guided independent study (GIS). Assessment method: major final year project, coursework; group presentations; exams

Key skills are promoted via student centred activities in tutorials; these include group discussions, group work. Coursework assignments provide a vehicle for students to practice writing academically, including essay and report writing, as well as group work and group presentations, both orally and in writing. Critical evaluation of the literature and existing work is fostered through seminar discussions and as part of the assessments. All key skills converge in the major final year project where they are supported by the student's supervisor. Assessment method: group presentation, written coursework (essay, report, literature search), tests, exams, major final year project.

Teaching informed and enriched by research

- The curriculum has been designed such that up-to-date research and real-life demos are presented to the students as a means of demonstrating the course content and its strong bound with the industry's requirements and staff's research. For example, in the object oriented module the content is structured around well known video games such as 'Asteroids' and the students are requested to design and implement a 2D game engine based on object-oriented principles. Another example is the AI module where students are asked to design a 3D game incorporating AI techniques and to implement and enhance a real game engine provided by the module leader.

- The staff involved in teaching in the course has extensive experience in games development, design and animation for games and they are actively involved in innovative research projects. This is reflected in staffs' participation in computer game conferences and seminars as well as in their research-active profile.

Course Structure
This section shows the core and option modules available as part of the course and their credit value. Full-time Undergraduate students study 120 credits per year. (8 modules of 15 credits per year).

Credit Level 3 (Foundation)

Code	Title	Status	Value
EBSY301	Thinking About Technology	Core	15
EICG301	Introduction to Programming & Games Design Project	Core	30
ECSC302	Foundation Mathematics	Core	15
EECT300	The Computer	Core	15
EBSY302	Spreadsheets & Databases	Core	15
ECSC301	Discrete and Continuous Maths	Core	15
EBSY300	Professional & Transferable Skills	Core	15

Credit Level 4 (1st year)

Code	Title	Status	Value
ECSC410	Software Development Principles I	Core	30
ECSC405	Software Development Principles II	Core	15
EICG406	Object Oriented Games Project I	Core	30
ECSC404	Computer Systems Fundamentals	Core	15
EICG402	Mathematics and Geometry for Games	Core	15
ECSC409	Software Engineering Principles	Core	15

Award of Certificate of Higher Education in Computer Games Development available

Credit Level 5 (2nd year)

Code	Title	Status	Value
EICG505	OO Development for Games and Management	Core	30
EICG502	Physics for Games Programming	Core	15
EIGA501	Introduction to 3D Graphics	Core	15
EICG507	Real Time Graphics	Core	15
EICG503	Game engines and platforms	Core	15
EICG501	Professional Practice	Core	15
EICG506	3D Games Modelling	Option	15
ECSC502	Algorithms and Data Structures	Option	15
ECWM511	Mobile Application Development	Option	15
EIGA504	3D Animation	Option	15

Award of Diploma of Higher Education in Computer Games Development available

Credit Level 6 (3rd year)

Code	Title	Status	Value
EICG699	Project	Core	30
EICG698	Project Thesis	Core	15
EICG601	Advanced Maths for Games Programming	Core	15
EICG603	OO Development for Games II	Core	15
EICG602	Networking Games Design and	Core	15

Academic Regulations

The BSc (Honours) Computer Games Development and its intermediate awards operate in accordance with the University's Academic Regulations and the *Framework for Higher Education Qualifications in England, Wales and Northern Ireland* published by the Quality Assurance Agency for Higher Education (QAA) in 2008.

All students should make sure that they access a copy of the current edition of the general University handbook called ***Essential Westminster 2010/11*** which is available at westminster.ac.uk/essential-westminster . The following regulations should be read in conjunction with the Modular Fr*amework for Undergraduate Courses* and relevant sections of the current *Handbook of Academic Regulations* .

A *pass* in a module is achieved when the overall mark is greater then or equal to 40%; with at least 30% in the final assessment and any qualifying marks and/or sets achieved as detailed in the module handbook.

Condoned Credit

A student may be awarded condoned credit at Levels 3 and 4 only, on the condition that the failed element(s) of assessment has been attempted at both the first and referred opportunity, and where he/she has achieved:

a) an overall module mark of greater than or equal to 30% but less than 40%;
b) an overall mark of 40% or greater but not reached the required qualifying
mark(s) and/or qualifying set(s) as detailed in the module handbook.

Where a student is awarded condoned credit, the recorded module mark will be capped at 40%. Condoned credit will count towards any credit limits for specified awards. Where a student is awarded condoned credit in a module but subsequently achieves an overall pass at a re-take, credit may contribute only once to an award.

Progression

To progress from Level 3 to Level 4 and from Level 4 to Level 5 in full time study, a student must achieve an average of 40% across 120 credits; to progress from Level 5 to Level 6 full-time study, a student must pass at least 165 credits, including 75 credits at Level 5.

To qualify for the award of Computer Games Development , a student must:
a) Obtained at least 360 credits including:
- passed 75 credits at Level Four or higher and achieved at least a condoned

Support for Students

On arrival, an induction programme will introduce students to the staff responsible for the course, the campus on which they will be studying, the Library and IT facilities and to the School Registry. Students will be provided with the Course Handbook, which provides detailed information about the course. Students are allocated a personal tutor who can provide advice and guidance on academic matters.

Learning support includes the Library which, across its four sites, holds print collections of 360,000 books, 1,600 journal subscriptions and substantial audio visual collections. Access to all resources including over 6,500 electronic resources (databases, e-journals, e-books, exam papers and links to recommended websites) is facilitated through Library Search, a new online service

There are over 3,500 computers spread over the four University campuses available for students use. The University uses a Virtual Learning Environment called Blackboard where students can access course materials and communicate with staff and other students via message boards.

At University level, Services for Students provide advice and guidance on accommodation, financial and legal matters, personal counselling, health and disability issues, careers and the chaplaincy providing multi-faith guidance. The International Office provides particular support for international students. The University of Westminster Students' Union also provides a range of facilities to support all students during their time at the University.

Reference Points for the course

Internally

- University Quality Assurance Handbook and Modular Frameworks
- Staff research and development
- University Teaching and Learning policy statements
- Industry advisory panel

Externally

- QAA Computing Benchmark Statement
- Industrial advisors from Rare and Short Fuze
- Member of Skillset Media Academy Network

Quality Management and Enhancement

Course Management
The BSc (Honours) Computer Games Development course is under the Computer Science and Software Engineering Department (CSSE) and the management structure supporting the course is as follows:

- Course Leader Anastassia Angelopoulou, is responsible for day to day running and overall management of the course and development of the curriculum
- Head of Department Dr. Alexandra Psarrou, holds academic responsibility for the course and other courses within the Department
- Dean of School Professor Graham Megson, holds overall responsibility for the course, and for the other courses run by the School

Course approval, monitoring and review
The course was initially approved by a University Validation Panel in 2009. The Panel included internal peers from the University and external subject specialists from academia and industry to ensure the comparability of the course to those offered in other Universities and the relevance to employers. Periodic Course Review helps to ensure that the curriculum is up-to-date and that the skills gained on the course continue to be relevant to employers.

The course is monitored each year by School to ensure that it is running effectively and that issues that might affect the student experience have been appropriately addressed. Staff will consider evidence about the course, including the outcomes from each Course Committee, evidence of student progression and achievement and the reports from External Examiners, to evaluate the effectiveness of the course. The Annual Monitoring Sub-Committee considers the School action plans resulting from this process and the outcomes are reported to the Academic Council, which has overall responsibility for the maintenance of quality and standards in the University.

Student involvement in Quality Assurance and Enhancement
Student feedback is important to the University and student comment is taken seriously. Student feedback is gathered in a variety of ways. The most formal mechanism for feedback on the course is the course committee. Student representatives will be elected to sit on the committee to represent the views of their peer group in the discussions held at the committee. The University and the Students' Union work together to provide a full induction to the role of the Course Committee.

All students are asked to complete a Module Feedback Questionnaire at the end of each module. The feedback from this will inform the Module Leader on the effectiveness of the module and highlight areas that could be enhanced. The University also has an annual Student Experience Survey which provides valuable feedback about a range of University services.

For more information about this course:

BSc (Honours) Computer Games Development:
http://www.westminster.ac.uk/schools/computing/subjects/human-interaction-and-multimedia2/bsc-honours-computer-games-development

For further information and advice contact:
Course Enquiries Team on
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Admissions Tutor: Mark Baldwin
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Disability Officer: Cheng Lee
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Please note – This programme specification provides a concise summary of the main features of the course and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. This specification should be read in conjunction with the Course Handbook provided to students and Module Handbooks which provide more detailed information on the specific learning outcomes, content, teaching, learning and assessment methods for each module.