Programme Specification Document

Approved, 2022.02

Overview

Programme Code	45584
Programme Title	Computer Games Development
Awarding Institution	Liverpool John Moores University
Programme Type	Degree with Foundation
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Syed Naqvi
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Science with Honours (SW) (Fnd) - SBSHF	See Learning Outcomes Below
Recruitable Target	Bachelor of Science with Honours (Fnd) - BSHF	See Learning Outcomes Below
Alternative Exit	Bachelor of Science (Fnd) - BSF	Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.
Alternative Exit	Diploma in Higher Education (SW) (Fnd) - SDHEF	Develop good understanding of the principles of computer games technology, programming, software engineering and digital content production pipeline for games. Apply this knowledge and its underpinning computing background to solve problems related to computer games development. Analyse the effectiveness of the solution by means of testing and evaluation. Interpret available information and make comparisons. Demonstrate a range of skills including problems-solving as individual or as part of a group. A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.
Alternative Exit	Diploma of Higher Education (Fnd) - DHEF	Develop good understanding of the principles of computer games technology, programming, software engineering and digital content production pipeline for games. Apply this knowledge and its underpinning computing background to solve problems related to computer games development. Analyse the effectiveness of the solution by means of testing and evaluation. Interpret available information and make comparisons. Demonstrate a range of skills including problems-solving as individual or as part of a group.
Alternative Exit	Bachelor of Science (SW) (Fnd) - SBSF	Students who obtain this award will have achieved most but not all of the programme learning outcomes of the equivalent Bachelors award with honours.
Alternative Exit	Certificate of Higher Education (Fnd) - CHEF	Develop computer programs using elementary programming constructs. Discuss computer systems at the hardware and software levels. Understand the different approaches required to solve computer-based problems. Discuss a range of practical aspects of computing and apply the associated tools and techniques. Identify a personal development plan to support their career path and recognise ethical, legal and professional aspects that relate to the computing profession. Design and develop a website using appropriate tools and techniques. Communicate their ideas and take personal responsibility for their learning. Discuss a range of computing challenges specific to Computer Games Development.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	UG-Computing (2022)

Accreditation

Programme Accredited by

PSRB Name	Type of Accreditation	Valid From Date	Valid To Date	Additional Notes
BCS, the Chartered Institute for IT	Accredited by BCS, the Chartered Institute for IT for the purposes of fully meeting the academic requirement for registration as a Chartered IT Professional.			

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Full-Time, Face to Face	September	LJMU Taught	4 Years
Sandwich Year Out, Face to Face	September	LJMU Taught	5 Years

Aims and Outcomes

Educational Aims of the Programme

The specific aims of the programme are as follows: • To provide students with a comprehensive understanding of current and developing computer games technologies and research issues. • To provide students with relevant technical skill and experience in computer games development. • To provide a platform for career development, innovation and/or further postgraduate study. • To develop students' analytical, creative, problem-solving and evaluation skills • To help our students to develop the skills to become autonomous learners. • To encourage students to engage with the development of employability skills by completing a self-awareness statement. • To develop students' skill in researching, analysing and implementing innovative and revolutionary game development technologies. • For students undertaking a placement year the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment. The programme meets the QAA benchmark statements for the subject of Computing.

Learning Outcomes

Code	Description
PLO1	Critically analyse software tools used in computer games development.
PLO2	Evaluate relevant mathematical, artificial intelligence and game physics concepts in game software development.
PLO3	Apply structured and formal software engineering techniques in the development of game software.
PLO4	Analyse differences programming languages and software development tools in terms of their suitability in computer games development.
PLO5	Implement two-dimensional and three-dimensional interactive graphical application using appropriate graphics API.
PLO6	Critically reflect on innovative and revolutionary technologies in game development
PLO7	Plan, conduct and report a research project.
PLO8	Deploy a game level editor to produce a computer game level
PLO9	Deploy appropriate software tools to create game assets and conditioning in a game engine
PLO10	Evaluate safe memory and hardware resource management techniques in a game programming context
PLO11	Work professionally as a member of a team.
PLO12	Plan and execute designs for a complex computer game
PLO13	Identify appropriate tools and techniques to be used for an investigation.
PLO14	Plan and manage an IT project.
PLO15	Deploy a wide range information technology for effective information retrieval.
PLO16	Communicate complex information effectively by written or verbal means.

Code	Description
PLO17	Identify job roles and opportunities that reflect personal interest and expertise.
PLO18	Plan and manage personal learning and development.
PLO19	Implement a computer game’s software using a software development process.
PLO20	Represent complex design and implementation aspects of a computer game with appropriate software documentation
PLO21	Critically reflect on professionalism and ethics relating to computer games development practice.
PLO22	Identify computer science challenges and their impacts upon computer games development.
PLO23	Apply computing knowledge to the lifecycle of computer games development and digital content production workflow.
PLO24	Evaluate core concepts behind interactive computer graphics, real-time rendering and computer animation techniques.
PLO25	Evaluate core mathematics principles used in computer graphics applications and computer game software.

Programme Structure

Programme Structure Description

The placement year, module 5105COMSCI, will follow Level 5 and students will be enrolled on a 480 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Students successfully completing the assessment of the placement year are eligible for a Sandwich award. Students not undertaking a placement year are registered on the non-sandwich version of the programme and will have the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 480 credit honours with study abroad programme. Of those 480 credits, 120 will be taken via a Level 5 study abroad module 5115COMSCI. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Students starting on this programme prior to September 2021 will be required to complete the modules specified in the programme specification in force when they commenced their study. This requirement may be varied should a student take a leave of absence or be required to complete final module attempts.

Programme Structure - 600 credit points	
Level 3 - 120 credit points	
Level 3 Core - 120 credit points	CORE
[MODULE] 3100FNDET Algorithms and Computing Approved 2022.02 - 10 credit points	
[MODULE] 3102FNDET Foundation Mathematics for Engineering and Technology 1 Approved 2022.02 - 20 credit points	
[MODULE] 3106FNDET Programming Approved 2022.01 - 10 credit points	
[MODULE] 3201FNDCMP Personal, Academic and Skills Development Approved 2022.03 - 20 credit points	
[MODULE] 3209FNDCMP Information Systems Development Approved 2022.01 - 20 credit points	
[MODULE] 3210FNDCMP Creative Computing Approved 2022.01 - 20 credit points	
[MODULE] 3211FNDCMP Applied Computing Approved 2022.01 - 20 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4201COMP Computer Systems Approved 2022.01 - 20 credit points	
[MODULE] 4203COMP Professional Practice Approved 2022.03 - 10 credit points	
[MODULE] 4204COMP Data Modelling Approved 2022.01 - 10 credit points	
[MODULE] 4208COMP Fundamentals of Games Programming Approved 2022.03 - 20 credit points	
[MODULE] 4209COMP Maths and Graphics Approved 2022.01 - 20 credit points	
[MODULE] 4222COMP Introduction to Web Development Approved 2022.02 - 20 credit points	
[MODULE] 4225COMP Introduction to Video Game Studies Approved 2022.01 - 20 credit points	
Level 5 - 240 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5200COMP Group Project Approved 2022.01 - 20 credit points	
[MODULE] 5201COMP Computer Networks Approved 2022.02 - 20 credit points	
[MODULE] 5207COMP Data Structures and Algorithms for Games Approved 2022.03 - 20 credit points	
[MODULE] 5208COMP 3D Computer Graphics Approved 2022.01 - 20 credit points	
[MODULE] 5209COMP Digital Games Content Production Approved 2022.02 - 20 credit points	
[MODULE] 5210COMP Software Engineering for Games Approved 2022.02 - 20 credit points	
Level 5 Optional - No credit points	OPTIONAL

Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5105COMSCI Sandwich Year - Computer Games Development Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5115COMSCI Study Year Abroad - Computer Games Development Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 80 credit points	CORE
[MODULE] 6200COMP Project Approved 2022.01 - 40 credit points	
[MODULE] 6205COMP Advanced 3D Games Development Approved 2022.01 - 20 credit points	
[MODULE] 6207COMP Advanced Topics in Games Development Approved 2022.01 - 20 credit points	
Level 6 Optional - 40 credit points	OPTIONAL
[MODULE] 6206COMP Mixed Reality Technologies Approved 2022.01 - 20 credit points	
[MODULE] 6208COMP Advanced Games Graphics Techniques Approved 2022.01 - 20 credit points	
[MODULE] 6210COMP User Experience Design Approved 2022.01 - 20 credit points	
[MODULE] 6231COMP Embedded Systems Approved 2022.01 - 20 credit points	

Module specifications may be accessed at https://proformas.ljmu.ac.uk/Default.aspx

Teaching, Learning and Assessment

Core knowledge and understanding are achieved through the use of a range of appropriate teaching methods. Based on the philosophy that students learn through active participation, these methods will incorporate, whenever possible, student-oriented activities and practical work. Students are motivated by being given a specific task with an achievable outcome, ranging from completion of a small tutorial exercise to a full-scale individual project at level six. Acquisition of programme outcomes are done through a combination of lectures, tutorials, workshop, laboratory work, coursework (both individual and team work),project and guided independent study. Throughout the learner is encouraged to undertake independent reading and tutorials both to supplement and consolidate what is being taught / learnt and to broaden their individual knowledge and understanding of the subject. The Knowledge and Understanding Learning Outcomes will be assessed via formal examination, individual and team coursework, demonstration of practical work, and completion of project at level six. Assessment method for each module is specified in modules specification. Each module is assessed by examination and/or coursework. Subject specific skills are developed through a mixture of small group tutorials, workshops, team working, course work assignments and projects. Subject specific skills are assessed by coursework and formal exams. The level six project will demonstrate most of the student's ability in this area. Assessment method for each module is specified in modules specification. Practical skills are developed throughout the programme. The basic skills are provided at the lower levels. These are supplemented at higher levels by more advanced tools and techniques. Some of these skills are practised in the placement year. Specialist software is available in labs or from specified PCs in the libraries. Practical skills are reinforced by the use of workshop-based sessions at each level, and the production of a portfolio of game project. The various computer programming modules at levels four and five provide relevant practice in industry standard languages. Problem solving skill is a key aspect of all programming related modules at each level. The individual Project at level six provides an opportunity for students to apply all the techniques that they have been exposed to in a large-scale development. Practical skills are assessed via laboratory sessions, workshops, submission of reports, demonstration of systems, industrial placement and individual projects. Personal Development opportunities are inherent within the programme. The placement year is assessed, by portfolio, on a pass / fail basis. Key skills are developed throughout the programme in a variety of forms. Specifically through a combination of research related coursework, guided independent study and projects, examinations, group work and presentations.

Opportunities for work related learning

Level 4: 4203COMP Professional Practice - this module provides students with an opportunity to consider their future role as a computing professional and develop a plan to enable them to progress in their chosen career. Level 5: 5200COMP Professional Issues – this module provides further insight into developing the role of the student becoming a computing professional. Students will be encouraged to become student members of appropriate professional bodies for the computing industry (e.g. ACM, IEEE or BCS) as part of their development. 5105COMSCI Sandwich Year Computer Games Development - The aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give students the opportunity to develop professional skills relevant to their programme of study as well as the attitude and behaviours necessary for employment in a diverse and changing environment.

Entry Requirements

Type	Description
BTECs	BTEC Extended Diploma To the value of 88 UCAS points. BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate To the value of 88 UCAS points when combined with other qualifications.
International Baccalaureate	Applicants should have or expect to obtain a total of 88 UCAS points overall.
Alternative qualifications considered	Qualifications deemed equivalent to the above upon completion of appropriate assessment will be considered acceptable. Applicants should have five GCSE (or equivalent) passes of at least grade C including Mathematics and English (or IELTS 6.0).

Other international requirements	Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria. All applicants should have achieved IELTS 6 or equivalent.
A levels	Applicants should have or expect to obtain a total of 112 UCAS points with a maximum of 20 points from AS level qualifications.

Extra Entry Requirements