

# PROGRAMME SPECIFICATION

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## Bachelor of Science with Honours (SW) (Fnd) in Computer Games Development

<b>Awarding institution</b>	Liverpool John Moores University
<b>Teaching institution</b>	LJMU
<b>UCAS Code</b>	2X31
<b>JACS Code</b>	I160
<b>Programme Duration</b>	Full-Time: 4 Years, Sandwich Thick: 5 Years
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Subject benchmark statement</b>	Computing (2019)
<b>Programme accredited by</b>	BCS, The Chartered Institute for IT
<b>Description of accreditation</b>	Accredited by BCS, the Chartered Institute for IT for the purposes of fully meeting the academic requirement for registration as a Chartered IT Professional. Accredited by BCS, the Chartered Institute for IT on behalf of the Engineering Council for the purposes of partially meeting the academic requirement for registration as a Chartered Engineer
<b>Validated target and alternative exit awards</b>	Bachelor of Science with Honours (Fnd) in Computer Games Development  Bachelor of Science with Honours (SW) (Fnd) in Computer Games Development  Diploma of Higher Education (Fnd) in Computer Games Development  Diploma in Higher Education (SW) (Fnd) in Computer Games Development  Certificate of Higher Education (Fnd) in Computer Games Development
<b>Programme Leader</b>	Syed Naqvi

## 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.

### **Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education (Fnd)**

*A student who is eligible for this award will be able to:*

- 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.

### **Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education (Fnd)**

*A student who is eligible for this award will be able to:*

- 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.

### **Target award Learning Outcomes - Bachelor of Science with Honours (SW) (Fnd)**

*A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.*

*A student who is eligible for this award will be able to:*

1. Critically analyse software tools used in computer games development.
2. Plan and execute designs for a complex computer game
3. Implement a computer game's software using a software development process.
4. Represent complex design and implementation aspects of a computer game with appropriate software documentation
5. Critically reflect on professionalism and ethics relating to computer games development practice.
6. Identify computer science challenges and their impacts upon computer games development.
7. Apply computing knowledge to the lifecycle of computer games development and digital content production workflow.
8. Evaluate core concepts behind interactive computer graphics, real-time rendering and computer animation techniques.
9. Evaluate core mathematics principles used in computer graphics applications and computer game software.
10. Evaluate relevant mathematical, artificial intelligence and game physics concepts in game software development.
11. Apply structured and formal software engineering techniques in the development of game software.
12. Analyse differences programming languages and software development tools in terms of their suitability in computer games development.
13. Implement two-dimensional and three-dimensional interactive graphical application using appropriate graphics API.
14. Critically reflect on innovative and revolutionary technologies in game development

15. Plan, conduct and report a research project.
16. Deploy a game level editor to produce a computer game level
17. Deploy appropriate software tools to create game assets and conditioning in a game engine
18. Evaluate safe memory and hardware resource management techniques in a game programming context
19. Work professionally as a member of a team.
20. Identify appropriate tools and techniques to be used for an investigation.
21. Plan and manage an IT project.
22. Deploy a wide range information technology for effective information retrieval.
23. Communicate complex information effectively by written or verbal means.
24. Identify job roles and opportunities that reflect personal interest and expertise.
25. Plan and manage personal learning and development.

## Alternative target awards

*A student who is eligible for the following awards will be able to:*

Bachelor of Science with Honours (Fnd) in Computer Games Development -

A student successfully completing this award will have acquired the subject knowledge and understanding as well as skills and other attributes as detailed above but will not have successfully completed a placement year.

## Teaching, Learning and Assessment

*The methods used to enable outcomes to be achieved and demonstrated are as follows:*

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.

## Programme structure - programme rules and modules

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 2020 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.

Level 6	Potential Awards on completion	Bachelor of Science with Honours (SW) (Fnd)
Core	Option	Award Requirements
6200COMP Project (40 credits) 6205COMP Advanced 3D Games Development (20 credits) 6207COMP Advanced Topics in Games Development (20 credits)	6206COMP Mixed Reality Technologies (20 credits) 6208COMP Advanced Games Graphics Techniques (20 credits) 6210COMP User Experience Design (20 credits) 6231COMP Embedded Systems (20 credits)	80 core credits at level 6 40 option credits at level 6

Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5200COMP Group Project (20 credits) 5201COMP Computer Networks (20 credits) 5207COMP Data Structures and Algorithms for Games (20 credits) 5208COMP 3D Computer Graphics (20 credits) 5209COMP Digital Games Content Production (20 credits) 5210COMP Software Engineering for Games (20 credits)		120 core credits at level 5 0 option credits at level 5

Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4200COMP Introduction to Programming (20 credits) 4201COMP Computer Systems (20 credits) 4203COMP Professional Practice (10 credits) 4204COMP Data Modelling (10 credits) 4208COMP Fundamentals of Games Programming (20 credits) 4209COMP Maths and Graphics (20 credits) 4222COMP Introduction to Web		120 core credits at level 4 0 option credits at level 4

Development (20 credits)		
Level 3	Potential Awards on completion	
Core	Option	Award Requirements
3100FNDET Algorithms and Computing (10 credits) 3102FNDET Foundation Mathematics for Engineering and Technology 1 (20 credits) 3106FNDET Programming (10 credits) 3201FNDCMP Personal, Academic and Skills Development (20 credits) 3209FNDCMP Information Systems Development (20 credits) 3210FNDCMP Creative Computing (20 credits) 3211FNDCMP Applied Computing (20 credits)		120 core credits at level 3 0 option credits at level 3

## Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.  
<https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework>

## Opportunities for work-related learning ( location and nature of activities)

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.

## Criteria for admission

### A/AS Level

Applicants should have or expect to obtain a total of 112 UCAS points with a maximum of 20 points from AS level qualifications.

### BTEC National Diploma

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.

### Irish Leaving Certificate

Applicants should have or expect to obtain a total of 88 UCAS points overall.

### Scottish Higher

Applicants should have or expect to obtain a total of 88 UCAS points overall.

### International Baccalaureate

Applicants should have or expect to obtain a total of 88 UCAS points overall.

### Other

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).

### **Mature entry**

Mature applicants will be considered on a case-by-case basis. The admissions team will be particularly concerned with the length of time since any relevant academic study and relevant background from work experience or 'Access' courses.

### **Overseas qualifications**

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.

## **External Quality Benchmarks**

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA). Published review reports are available on the QAA website at [www.qaa.ac.uk](http://www.qaa.ac.uk)

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

## **Support for students and their learning**

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

## **Methods for evaluating and improving the quality and standards of teaching and learning**

### **Student Feedback and Evaluation**

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

### **Staff development**

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

### **Internal Review**

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

### **External Examining**

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which

the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

**Please note:**

*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, teaching, learning and assessment methods of each module can be found in module and programme guides.*