

PROGRAMME SPECIFICATION

Bachelor of Science with Honours (SW) in Computer Science

Awarding institution	Liverpool John Moores University
Teaching institution	LJMU
UCAS Code	C587
JACS Code	I100
Programme Duration	Full-Time: 3 Years, Sandwich Thick: 4 Years
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	Computing (2007)
Programme accredited by	BCS, The Chartered Institute for IT
Description of accreditation	Initial CITP. *Confirmation of full accreditation will be sought in 2019.
Validated target and alternative exit awards	Bachelor of Science with Honours in Computer Science Bachelor of Science with Honours (SW) in Computer Science Diploma of Higher Education in Computer Science Diploma in Higher Education (SW) in Computer Science Certificate of Higher Education in Computer Science
Programme Leader	Martin Randles

Educational aims of the programme

The overall aim of the course is to provide a balanced, integrated and practical based education in all aspects of computing and the underlying science behind it for utilisation in organisations where IT and computing is a major activity.

The specific aims of the course are as follows:

- To provide students with a full, systematic understanding of current and developing Computer Science.
- To enable the student to acquire the skills needed in applying computer science to practical development.
- To bring the student to an understanding of the mathematical and scientific concepts that underpin modern computing.
- To encourage students to fully engage with the development of employability skills by completing a self-awareness statement.
- To enable students to explore the issues surrounding Computer Science in Industrial contexts.
- To facilitate students in the development of expertise and interest in topic areas of direct and complementary relevance to their work or planned career.
- To encourage students to become advanced autonomous learners.
- 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.

Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education

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

Investigate the development of computer programs using elementary constructs from computer science.

Apply web science and a variety of tools for website design.

Discuss the technical challenges of social computer science and investigate the ethical, commercial and economic issues within this field.

Discuss a range of practical aspects of computer science and apply the associated tools and techniques used in

them.

Discuss computer architecture at the hardware and software levels and basic security concepts.

Understand the basic concepts of computer science.

Understand the different approaches required to solve computer-based problems.

Communicate their ideas and take personal responsibility for their learning.

Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education

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

Understand the practical application of computer science.

Use formal methods and the scientific principles of programming and correctness.

Use object-oriented design in formulating an implementation.

Appreciate the fundamentals of algorithm and language design.

Understand relationships, and their relevance to databases, whilst also being able to create and maintain a database.

Identify the professional skills required within the computing industry.

Demonstrate a range of skills including problems-solving as an 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)

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

Knowledge and understanding

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

A1. Be critically aware of current and developing principles and practices within Computer Science.

A2. Have widened and deepened conceptual and practical knowledge and skills in the areas of Computer Science.

A3. Have been exposed to and applied a range of advanced tools and techniques used in the specification of complex computer based systems.

A4. Have critically analysed a range of development domains.

A5. Have a clear understanding of how to effectively and creatively manage Computer Science projects.

A6. Use knowledge with originality and be innovative in Computer Science.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Core knowledge and understanding is acquired via lectures, tutorials, practical work, workshops and guided independent study. Independent study is used where appropriate resource material is available and increases as the programme progresses. Specifically, acquisition of 1 is via a combination of lectures, projects, seminars, and guided independent study. Acquisition of 2, 3, 4, 5 and 6 is via a mixture of lectures, tutorials, laboratory work, coursework, and projects. Students are given feedback on all work produced.

Assessment

Assessment methods are specified in each module specification. All learning outcomes in a module are assessed and the type of assessment specified for each outcome. Each module is assessed by examination and/or course work. The nature of the course work varies for each module.

Skills and other attributes

Intellectual Skills

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

B1. Demonstrate systematic and comprehensive knowledge and understanding of Computer Science concepts, principles and theories.

B2. Use such knowledge with originality in system modelling, requirements analysis and design.

B3. Perform critical evaluation and testing for a computer-based system.

B4. Deploy appropriate methods and tools creatively for the specification of a complex computer-based system.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Cognitive skills are developed throughout the programme via tutorial, group discussion, teamwork, coursework, projects and presentations. Specifically, skill 1 is developed through tutorial group discussion, teamwork, coursework, projects, and presentations. Skills 2, 3 and 4 are developed through laboratory work, coursework, and projects.

Assessment

Assessment of cognitive skills is through written examinations, laboratory work, coursework reports, project work, reports and presentations. Specifically, written examinations (1, 2), laboratory work (2-4), coursework reports (1-4), and/or project work, reports and presentations (1-4).

Professional practical skills

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

C1. Develop and evaluate Computer Science projects.

C2. Manage Computational projects.

C3. Use a wide range of computing tools, facilities and techniques effectively.

C4. Work individually and/or as a team member.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Practical skills are developed throughout the programme. Coursework and projects are designed to provide practical opportunities for students to work independently or in groups. Specifically, skills 1, 2 and 3 are developed through laboratory work, coursework, and project work. Skill 4 is developed through individual and group coursework, laboratory work, and project work.

Assessment

Assessment is normally by course work.

The placement year is assessed, by portfolio, on a pass / fail basis.

Transferable / key skills

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

D1. Use information technology, e.g. Computer Science tools.

D2. Apply numerical and formal methods skills to cases involving a quantitative dimension.

D3. Communicate effectively by written or verbal means.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

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. Skill 1 is developed through a combination of research-related coursework, guided independent study, and projects. Skill 2 is developed through study of technical methods, examinations, coursework, and projects. Skill 3 is developed through report writing for coursework and projects, written examinations, teamwork, presentations, and group discussion.

Assessment

Key skills are assessed as part of coursework (1-3), projects (1-3), written examinations (2,3) and presentations (3).

Alternative target awards

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

Bachelor of Science with Honours in Computer Science -

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.

Programme structure - programme rules and modules

Programme rules

The placement year, module 5100COMSCI, 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 5110COMSCI. 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.

Level 6	Potential Awards on completion	Bachelor of Science with Honours (SW)
Core	Option	Award Requirements
6100COMP PROJECT (40 credits) 6119COMP COMPUTER SCIENCE APPLICATIONS (20 credits) 6120COMP GRAPHICS AND DATA VISUALISATION (20 credits) 6121COMP PARALLEL ALGORITHMS (20 credits) 6122COMP VIRTUALISED COMPUTING ARCHITECTURES (20 credits)		120 core credits at level 6 0 option credits at level 6
Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5100COMP RESEARCH SKILLS (10 credits) 5101COMP PROFESSIONAL ISSUES (10 credits) 5102COMP DATABASE SYSTEMS (20 credits) 5104COMP OBJECT ORIENTED SYSTEMS DEVELOPMENT (20 credits) 5120COMP ALGORITHM DESIGN (20 credits) 5121COMP COMPILER DESIGN (20 credits) 5122COMP KNOWLEDGE-BASED SYSTEMS (20 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4100COMP INTRODUCTION TO PROGRAMMING (20 credits) 4101COMP COMPUTER SYSTEMS (20 credits) 4103COMP PERSONAL AND PROFESSIONAL DEVELOPMENT (10 credits) 4104COMP DATA MODELLING (10 credits) 4115COMP DISCRETE MATHEMATICS (20 credits) 4116COMP COMPUTER SCIENCE WORKSHOP (20 credits)		120 core credits at level 4 0 option credits at level 4

4122COMP INTRODUCTION TO INTERNET AND WEB DEVELOPMENT (20 credits)		
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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: 4103COMP Personal and Professional Development - 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: 5101COMP 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.

5100COMSCI Sandwich Year Computer Science - 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 112 UCAS points.

BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate

To the value of 112 UCAS points when combined with other qualifications.

Irish Leaving Certificate

Applicants should have or expect to obtain a total of 112 UCAS points overall.

Scottish Higher

Applicants should have or expect to obtain a total of 112 UCAS points overall.

International Baccalaureate

Applicants should have or expect to obtain a total of 112 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).

BSc Computer Science to MCOMP Computer Science transfer is allowed with the permission of the Programme Leader and the maintenance of good academic performance, normally with averages above 60% at levels 4 and 5. Such requests for transfer must be made before the end of level 5 of the programme.

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

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.