Programme Specification Document

Approved, 2022.03

Overview

Programme Code	35585
Programme Title	Software Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Degree
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Janet Lunn
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Science with Honours (SW) - SBSH	See Learning Outcomes Below
Recruitable Target	Bachelor of Science with Honours - BSH	See Learning Outcomes Below
Alternative Exit	Diploma of Higher Education - DHE	Use object-oriented design in formulating an implementation. Design, create, maintain and connect to a database. Identify and implement common data structures and algorithms. Develop software for a variety of platforms. Identify and justify choices in programming languages. 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.
Alternative Exit	Bachelor of Science (SW) - SBS	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	Certificate of Higher Education - CHE	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. Understand of the basics of data modelling and abstraction. Communicate their ideas and take personal responsibility for their learning. Discuss a range of computing challenges specific to Software Engineering.
Alternative Exit	Bachelor of Science - BS	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) - SDHE	Use object-oriented design in formulating an implementation. Design, create, maintain and connect to a database. Identify and implement common data structures and algorithms. Develop software for a variety of platforms. Identify and justify choices in programming languages. 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.

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
Sandwich Year Out, Face to Face	September	LJMU Taught	4 Years
Full-Time, Face to Face	September	LJMU Taught	3 Years

Aims and Outcomes

Educational Aims of the Programme

The overall aim of the course is to provide a balanced, integrated and practical based education in the tools, techniques and methods employed by the practitioner in the area of Software Engineering in organisations where software development is a major activity. The specific aims of the course are as follows: -To enable the student to acquire the skills needed in the investigation of user requirements and the development of a suitable design using the appropriate specifications and design methodologies. -To enable the student to acquire the skills required to produce software, which meets an external specification to the appropriate timescale and standards. -To enable the student to acquire the skills needed to determine the quality of software through the appropriate testing, verification and evaluation procedures. -To enable the student to acquire an understanding of the techniques and methods used in the estimation, planning and control of software projects. -To provide a suitable learning environment for the practical application of the concepts of software engineering in a realistic software development situation. - To encourage students to fully engage with the development of employability skills by completing a self-awareness statement. -To provide students with a fuller, systematic understanding of current and developing Software Engineering. -To enable students to explore the issues surrounding Software Engineering in Industrial contexts. -To facilitate students in the development of expertise and interest in topic areas of direct and complementary relevance to the workplace. -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.

Learning Outcomes

Code	Description
PLO1	Apply computer programming skills to medium to large systems.
PLO2	Critically evaluate and test software systems against requirements.
PLO3	Undertake algorithm selection and deployment.
PLO4	Deploy systematic and comprehensive knowledge and understanding of Software Engineering concepts, principles and theories to computing problems.
PLO5	Use knowledge with originality in system modelling, requirements analysis and design.
PLO6	Critically evaluate and test a computer-based system.
PLO7	Effectively manage a software project.
PLO8	Work professionally as a member of a team.
PLO9	Use an extensive range of Software Development tools.
PLO10	Apply numerical methods to computing problems involving a quantitative dimension.
PLO11	Communicate complex information effectively by written or verbal means.
PLO12	Manage a software development process.
PLO13	Identify job roles and opportunities that reflect personal interest and expertise.
PLO14	Plan and manage personal learning and development
PLO15	Critically reflect on the relationship of hardware to software in computer systems.

Code	Description
PLO16	Apply formal methods and modelling techniques to software engineering problems.
PLO17	Work on software engineering problems in an ethical way.
PLO18	Critically assess emerging and developing practices in Software Engineering.
PLO19	Use knowledge with originality and be innovative in Software Engineering.
PLO20	Apply problem solving in the context of large computer based systems. Perform systems modelling of computer-based systems as part of the development process.
PLO21	Evaluate tools and methods for selection and use in the development process.

Programme Structure

Programme Structure Description

The placement year, module 5106COMSCI, 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 5116COMSCI. 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 - 480 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4200COMP Introduction to Programming Approved 2022.03 - 20 credit points	
[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] 4220COMP Software Engineering Principles Approved 2022.01 - 20 credit points	
[MODULE] 4221COMP Software Engineering Workshop Approved 2022.01 - 20 credit points	
[MODULE] 4222COMP Introduction to Web Development Approved 2022.02 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5200COMP Group Project Approved 2022.01 - 20 credit points	
[MODULE] 5202COMP Database Systems Approved 2022.01 - 20 credit points	
[MODULE] 5204COMP Object-Oriented Systems Approved 2022.01 - 20 credit points	
[MODULE] 5217COMP Data Structures and Algorithms Approved 2022.01 - 20 credit points	
[MODULE] 5229COMP Automata, Languages and Computation Approved 2022.02 - 20 credit points	
[MODULE] 5230COMP Mobile and Web Development Approved 2022.02 - 20 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5106COMSCI Sandwich Year - Software Engineering Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5116COMSCI Study Year Abroad - Software Engineering Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6200COMP Project Approved 2022.01 - 40 credit points	
[MODULE] 6210COMP User Experience Design Approved 2022.01 - 20 credit points	
[MODULE] 6229COMP Applied Data Science Approved 2022.01 - 20 credit points	
[MODULE] 6230COMP Virtualisation and Cloud Computing 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 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. 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. Cognitive skills are developed throughout the programme via tutorial, group discussion, teamwork, coursework, projects and presentations. Assessment of skills is by coursework and examinations. The final year project will further demonstrate the student's ability in this area. The assessment method for each module is specified in the module's 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. The various computer programming modules at levels 4 and 5 provide relevant practice in industry standard languages. Problem solving skill is a key aspect of all programming related modules at each level. Some of these skills are practiced in the placement year. Specialist software is available in labs or from specified PCs in the libraries. The individual final year project 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 embedded 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. Key skills are assessed as part of coursework, projects, written examinations 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 Group Project – 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. 5106COMSCI Sandwich Year Software Engineering - 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 112 UCAS points. BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate To the value of 112 UCAS points when combined with other qualifications.
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.
International Baccalaureate	Applicants should have or expect to obtain a total of 112 UCAS points overall.

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.
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).

Extra Entry Requirements