Programme Specification Document

Approved, 2022.03

Overview

Programme Code	45581
Programme Title	Computer Security
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	Thomas Berry
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	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 Security.
Alternative Exit	Diploma in Higher Education (SW) (Fnd) - SDHEF	Identify software security requirements and use secure development methods in an implementation. Provide evidence of experience in a number of information security management methods (e.g. risk analysis). Describe the structure of operating systems and apply the underlying principles. Use security software tools to perform computer system vulnerability analysis. Understand how databases are structured, how to query them for information and be able to develop a database to solve a problem. Understand the ethical and professional issues involved in working in the computing industry. 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	Identify software security requirements and use secure development methods in an implementation. Provide evidence of experience in a number of information security management methods (e.g. risk analysis). Describe the structure of operating systems and apply the underlying principles. Use security software tools to perform computer system vulnerability analysis. Understand how databases are structured, how to query them for information and be able to develop a database to solve a problem. Understand the ethical and professional issues involved in working in the computing industry.
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	Bachelor of Science (SW) (Fnd) - SBSF	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.

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	5 Years
Full-Time, Face to Face	September	LJMU Taught	4 Years

Aims and Outcomes

Educational Aims of the Programme

The two principal themes in the programme are the development of computer science skills relating to information security, and the associated software engineering, management and analysis skills required to enact successful information security within networked computing environments. This is underpinned by themes of computing, networking and software engineering. The main aims are: -To provide students with the technical skills required for the development of computer security software solutions. -To enable the student to acquire the skills needed in the investigation of user requirements and the development of a suitable software design using the appropriate specifications and design methodologies. -To prepare students with the management skills required to implement Computer security. -To provide students with the knowledge of the wide range of issues involved in the implementation of Computer security, such as legal, ethical and privacy requirements. - To encourage students to engage with the development of employability skills by completing a self-awareness statement. -To provide students with a comprehensive understanding, critical awareness and ability to conduct evaluation of current computer security research issues. -To further develop students' originality in applying analytical, creative, problem solving and research skills. -To provide advanced, conceptual understanding, underpinning career development, innovation and further study such as PhD in the area of Computer Security. -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 techniques to solve computer security problem.
PLO2	Critically evaluate and test theories, concepts and systems relating to computer security.
PLO3	Plan, conduct and report a research project.
PLO4	Critically analyse evidence data for an security investigation.
PLO5	Evaluate security investigation and response methodologies.
PLO6	Work professionally as a member of a team.
PLO7	Identify and deploy appropriate tools and techniques for ethical hacking and security investigations.
PLO8	Conduct research into Computer Security.
PLO9	Apply numerical methods to computing problems involving a quantitative dimension.
PLO10	Communicate complex information effectively by written or verbal means.
PLO11	Identify job roles and opportunities that reflect personal interest and expertise.
PLO12	Manage a software development process, including secure software development.
PLO13	Plan and manage personal learning and development.
PLO14	Work on computer security problems in an ethical way.
PLO15	Design, plan and execute complex network security investigations.

Code	Description
PLO16	Use a wide range of IT infrastructure such as hardware / network configurations, types of systems, development tools, and emerging technologies to solve computing problems.
PLO17	Critically reflect on a wide range of security knowledge domains, such as physical and logical security, legal issues, privacy, internet security, and protection including forensics.
PLO18	Deploy a wide range of appropriate computing tools, facilities and techniques to solve a computer security problem.
PLO19	Utilise complex methods and skills to solve well-defined computer-based problems.
PLO20	Reflect on the impact of new technologies / standards / legal requirements on the security domain.

Programme Structure

Programme Structure Description

The placement year, module 5102COMSCI, 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 5112COMSCI. 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.

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] 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] 4205COMP Introduction to Computer Forensics and Security Approved 2022.01 - 20 credit points	
[MODULE] 4214COMP Problem Solving for Computer Security Approved 2022.01 - 20 credit points	
[MODULE] 4222COMP Introduction to Web Development Approved 2022.02 - 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] 5202COMP Database Systems Approved 2022.01 - 20 credit points	
[MODULE] 5203COMP Operating Systems Approved 2022.02 - 20 credit points	
[MODULE] 5216COMP System Penetration Testing Approved 2022.02 - 20 credit points	
[MODULE] 5218COMP Secure Software Development Approved 2022.02 - 20 credit points	
[MODULE] 5219COMP Information Security Management Approved 2022.01 - 20 credit points	
Optional Study Semester - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL

[MODULE] 5102COMSCI Sandwich Year - Computer Security Approved 2022.01 - 120 credit points	
OR Study Semester - 120 credit points	OPTIONAL
[MODULE] 5113COMSCI Study Year Abroad - Computer Forensics 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] 6202COMP Network Forensics Approved 2022.01 - 20 credit points	
[MODULE] 6213COMP Network Defence Approved 2022.01 - 20 credit points	
[MODULE] 6217COMP Ethical Hacking Approved 2022.01 - 20 credit points	
[MODULE] 6218COMP Applied Cryptography Approved 2022.01 - 20 credit points	

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

Teaching, Learning and Assessment

Acquisition of the skills is through a combination of lectures, tutorials, practical sessions and laboratory work. These skills are assessed across the 3 upper levels of the programme in a range of different assessments such as coursework, presentations and examinations. Throughout the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught / learnt and to broaden their individual knowledge and understanding of the subject.

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, via teamwork and consideration of professional issues within computer security. 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. 5102COMSCI Sandwich Year Computer Security - 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
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.
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.

A levels	Applicants should have or expect to obtain a total of 88 UCAS points with a maximum of 20 points from AS level qualifications.
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