

Overview

Programme Code	35660
Programme Title	Computer Networks
Awarding Institution	Liverpool John Moores University
Programme Type	Degree
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Denis Reilly
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	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	Apply research skills to support the analysis of a problem and the development and evaluation of a solution. Understand various ethical, professional and legal issues involved in working in the computing industry. Understand how databases are structured and how to query them for information to solve computing problems. Describe the structure of a typical operating system and apply principles to administer a networked system. Implement appropriate data structures and algorithms to computing problems. Understand the distributed system paradigm and how it makes use of computer networks. Understand the demands of mobile computing in terms of constraints on computer networks. 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	Certificate of Higher Education - CHE	Develop computer programs using elementary programming constructs. Discuss a range of practical aspects of computing and apply the associated tools and techniques used in them. Discuss computer architecture at the hardware and software levels and basic computer networking concepts. Understand a range of core concepts of Computer Science. Understand different approaches required to solve computer-based problems. Demonstrate the skills and ability to communicate their ideas and take personal responsibility for their learning.
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	Diploma of Higher Education - DHE	Apply research skills to support the analysis of a problem and the development and evaluation of a solution. Understand various ethical, professional and legal issues involved in working in the computing industry. Understand how databases are structured and how to query them for information to solve computing problems. Describe the structure of a typical operating system and apply principles to administer a networked system. Implement appropriate data structures and algorithms to computing problems. Understand the distributed system paradigm and how it makes use of computer networks. Understand the demands of mobile computing in terms of constraints on computer networks.
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Alternate Award Names	
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External Benchmarks

Subject Benchmark Statement	UG-Computing (2022)
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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	3 Years
Sandwich Year Out, 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 networked digital information systems (from here on 'Computer Networks'), and the associated software engineering, technology and analysis skills required to develop and maintain successful Computer Networks. The main aims are:

- To provide students with the technical skills required for the development of Computer Network 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 technology management skills required to implement and maintain Computer Networks
- To provide students with the knowledge of the wider issues involved in the implementation of Computer Networks, 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 Networks research issues.
- 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 computing problems.
PLO2	Demonstrate how to effectively manage and maintain a computer network.
PLO3	Apply knowledge and understanding of facts, concepts, principles and theories relating to computer networks.
PLO4	Collect and synthesise information from a variety of sources.
PLO5	Utilise methods and skills to solve well-defined computer-networks problems.
PLO6	Reflect on the impact of new technologies / standards / legal requirements in the area.
PLO7	Evaluate and test theories, concepts and systems.
PLO8	Demonstrate the skills necessary to plan, conduct and report a research project.
PLO9	Specify, design and construct programs to be used for the purpose of computer networking.
PLO10	Analyse user requirements for a networked system.
PLO11	Plan, manage, diagnose and maintain a small-scale computer network.
PLO12	Appreciate the software development process, including for networked software.
PLO13	Work effectively as a member of a team.
PLO14	Identify appropriate tools and techniques to be used in computer networks.
PLO15	Use information technology, e.g. Web and internet, for effective information retrieval.
PLO16	Apply numerical skills to cases involving a quantitative dimension.

Code	Description
PLO17	Communicate effectively by written or verbal means.
PLO18	Plan and manage learning and development.
PLO19	Demonstrate awareness of professional, legal, security and ethical issues.
PLO20	Understand networking principles including data communication, protocols, performance.
PLO21	Use a computer programming language to develop a networked application.
PLO22	Display professionalism: organization, management, team work, and ethics.
PLO23	Understand IT infrastructure, especially the Internet and related technologies.
PLO24	Appreciate security threats and risks in networked systems, including vulnerabilities, attacks, privacy, and forensics.
PLO25	Apply a range of contemporary tools & techniques used in the development of complex networked systems.

Programme Structure

Programme Structure Description

The placement year, module 5108COMSCI, 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 5118COMSCI. 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.

Programme Structure - 480 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5100COMP Research Skills Approved 2022.01 - 10 credit points	
[MODULE] 5101COMP Professional Issues Approved 2022.01 - 10 credit points	
[MODULE] 5102COMP Database Systems Approved 2022.01 - 20 credit points	
[MODULE] 5103COMP Operating Systems Approved 2022.01 - 20 credit points	
[MODULE] 5115COMP Distributed Systems Approved 2022.01 - 20 credit points	
[MODULE] 5116COMP Mobile Computing Approved 2022.01 - 20 credit points	
[MODULE] 5132COMP Network Technologies Approved 2022.01 - 20 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5108COMSCI Sandwich Year - Computer Networks Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5118COMSCI Study Year Abroad - Computer Networks Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6100COMP Project Approved 2022.01 - 40 credit points	
[MODULE] 6113COMP Network Defence Approved 2022.01 - 20 credit points	
[MODULE] 6114COMP Infrastructure and Services Approved 2022.01 - 20 credit points	
[MODULE] 6116COMP Internet of Things Approved 2022.01 - 20 credit points	
[MODULE] 6133COMP Advanced Topics in Networking 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 1 - 10 is through a combination of lectures, tutorials, practical sessions and laboratory work. 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. Knowledge and understanding is assessed via formal examination, individual and team coursework, demonstration of practical work, and a full-scale individual project at Level 6. Skills 1 - 6 are taught through lectures and developed through tutorial work throughout the course. Cognitive skills are partly assessed via formal examinations, but mainly through coursework assessment. The Level 6 project allows a student to demonstrate his/her cognitive skills. 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 such as virtual machines and private-cloud systems are available in department-maintained labs or remotely from specified PCs in the libraries. 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: 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. 5108COMSCI Sandwich Year Computer Networks - 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
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.
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). BSc Computer Networks to MCOMP Computer Networks 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.
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.
International Baccalaureate	Applicants should have or expect to obtain a total of 112 UCAS points overall.
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.

Extra Entry Requirements